

DEVELOPING OCCUPATIONAL HEALTH AND SAFETY SKILLS

Labor Occupational Health Program  
January 23-28, 1977  
Berkeley, California

EVALUATION

After each topic is completed you will be asked to write a brief evaluation of the topic. Please include any comments you have on the coverage of the topic, usefulness, methods of presentation, instructors, shortcoming, suggestions. This information will be useful in planning future programs and your cooperation would therefore be greatly appreciated. Thank you.

1. OVERVIEW OF OCCUPATIONAL HEALTH AND SAFETY

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2. OCCUPATIONAL DISEASE CONCEPTS

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3. UNDERSTANDING HEALTH STANDARDS

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4. SPECIFIC OCCUPATIONAL HAZARDS

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5. METHODS OF HAZARD IDENTIFICATION

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6. THE WALK-THROUGH SURVEY

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7. MONITORING & CONTROL TECHNIQUES

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8. USING MONITORING INFORMATION

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9. MONITORING: PROBLEM SOLVING

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10. MEDICAL SCREENING

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11. DOCUMENTATION AND COLLECTIVE BARGAINING

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12. FED-CAL/OSHA

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13. COLLECTIVE BARGAINING WORKSHOP

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## LABOR OCCUPATIONAL HEALTH PROGRAM

The primary objective of the Labor Occupational Health Program (LOHP) is to help bridge the gap between scientific knowledge and its application in correcting job hazards confronted by workers. This objective involves assisting employees, union representatives, and employers to initiate and implement their own health and safety programs. LOHP places emphasis on the development of educational programs and materials as well as providing technical assistance upon request. A section of the Center for Labor Research and Education, LOHP receives major financial support from the Ford Foundation.

At the conclusion of its second year of operations, the Labor Occupational Health Program could count among its achievements:

- \*Sponsorship of the first conference ever to be held in California solely for designated health and safety representatives from a variety of unions.

- \*Expansion of its services on two levels: (1) specialized health and safety education and training for groups, and (2) technical services to individual workers and unions seeking information on hazards in the work environment.

- \*Development of educational materials, particularly manuals for training programs, pamphlets, handbooks, and a film.

- \*Further development of an apprenticeship training program.

### Education and Technical Assistance

*The Asilomar Conference.* A major event in LOHP's year was a three-day educational conference for local union health and safety committee members held January 18-20, 1976, at Asilomar in Pacific Grove. The conference, organized by LOHP education coordinator Robert Fowler, attracted more than 100 persons representing industrial, building, and crafts unions as well as unions not covered by Cal/OSHA (railway workers) or only minimally protected employees such as those in the public sector.

The major portion of the conference was dedicated to six workshops, each led by an LOHP or Labor Center staff member along with a union representative. The workshops covered these subjects: formation of local union health and safety committees, collective bargaining for safety and health, employee rights and responsibilities under OSHA and Cal/OSHA, monitoring the workplace, evaluating membership health, and workers' compensation.

Other issues raised during the conference concerned organized labor's role in occupational health and safety, prospects for future legislation, and labor's participation in the setting of standards and the monitoring of the workplace. These issues

were voiced in the keynote address of Tony Mazzocchi (Legislative Director, Oil, Chemical and Atomic Workers International Union).

The LOHP staff was encouraged by conference participants to provide more intensive sessions for specific trades, and several one-day follow-up sessions are planned by LOHP for late 1976. Materials prepared especially for the Asilomar conference have been compiled into a single volume and are available upon request.

### **Educational Sessions**

At local union meetings and classes, in classes conducted by the Institute's Labor and Urban Studies Program, at gatherings of shop stewards, and at union district meetings, LOHP staff members have been offering instruction in occupational health and safety. Information has been developed on health hazards and has been presented to local union members in a variety of occupations: papermakers, steelworkers, machinists, teamsters, stationary engineers, cement workers, electricians, garment workers, railway workers, woodworkers, and chemical workers.

### **Educational Materials**

*Publications.* In its second year of publication, the 10-times-a-year newsletter, *Monitor*, has a circulation of 2,100 with copies distributed to some 1,000 unions in northern California. Among its subscribers are international and local unions, government agencies, management and professional groups, and individuals interested in the field. LOHP Director Donald Whorton occupies a regular column, "Doctor's Corner," in which he responds to workers' questions; "Clearinghouse" notes new publications, articles, and studies of interest in the field; "Recent Events" contains news items from all over the nation, and "Health Hazard Alert" details the effects of toxic substances in the workplace. Some of the lead articles during the year covered the effects of working with asbestos and workers' rights under the asbestos standard; the health hazards faced by hospital workers, grain workers, truck drivers, and those who are exposed on the job to radiation; and ways to fund local health and safety committees. (Back issues from 1974-1975 are now available in bound volumes.)

Besides publishing *Monitor*, LOHP has co-published (with Public Citizen's Health Research Group) a 200-page handbook, *Working for Your Life: A Woman's Guide to Job Health Hazards*. It was written by LOHP Coordinator Andrea Hricko, with Melanie Brunt, and was released in June 1976. The book covers facts and figures on women workers in a variety of jobs; the kinds of work hazards they encounter which can cause cancer, damage reproductive organs, or result in birth defects; the laws governing sex discrimination and occupational health; specific hazards of jobs employing large numbers of women (e.g., in offices, laundries, hospital, textile, and electronics plants); sources of information on occupational health; and ideas on how to gain safe working conditions.

Other LOHP publications have included the following pamphlets: "Preventing Occupational Cancer," and "California Negotiated Contract Clauses for Occupational Health and Safety." Also available are materials on medical screening, on occupational health sources and resources, and on occupational health in the Soviet Union. "The LOHP Guidebook," which had a printing of more than 1,000 copies, is to be revised in 1976.

*Film.* In another medium, LOHP produced a 22-minute film entitled "Working Steel," which is a presentation of the hazards and health effects associated with foundry work. The film was directed by Photographer Ken Light and a UC journalism graduate student Charles West. The film, which served as West's thesis, is available for sale or rental.

### **Apprenticeship Training**

To help alleviate the unusually high incidence of occupational injuries and disease among young workers, LOHP has developed an apprenticeship training project, supported by a federal OSHA grant and designed with the cooperation of the California Apprenticeship Council. The project has succeeded in developing a health and safety curriculum for a specific building trade (the carpet, soft tile, and linoleum setters) which will be integrated into the actual apprenticeship training program of the trade. A similar project is under way on behalf of workers in a metal trade, the moulders and coremakers. Furthermore, a workshop for instructors of apprentices for the floor covering trade has been designed to demonstrate how this trade's curriculum can be taught.

Materials developed so far for the training project include a 30-minute video tape, "Hazard Identification, A Training Film for Instructors of Apprentices," and the slide shows, "Lifting," "Hazards in the Floor Covering Industry," "Noise," "How the Body Functions and Protects Itself," and "Hand Tools." Training manuals have also been written for classes of apprentice foundry workers and floor covering workers. LOHP plans to continue emphasizing technical assistance, focusing on identification of health hazards which affect large numbers of workers.

### **Other Activities**

LOHP is engaged in a one-year study to evaluate the medical and legal aspects of work-related respiratory and cardiovascular diseases; the results of the study will be reported to the California Workers' Compensation Board. LOHP has also assisted University students with their research in the fields of law, conservation, natural resources, and health sciences. In addition, the staff has lectured on occupational health in various University departments.

### **Staff and Advisors**

Dr. Donald Whorton, a board-certified specialist in both occupational medicine and internal medicine, assumed the full-time directorship of LOHP in July 1975. Associated with him are Morris Davis, J.D., M.P.H., Associate Director; Janet Bertinuson, M.S. Coordinator of the Apprenticeship Program; Andrea Hricko, M.P.H., Health Coordinator; Robert A. Fowler, Education Coordinator; Sidney Weinstein, Editor; and Gene Darling and Lydia Vrsalovic, Staff Secretaries. Miguel Lucero, M.S. in biostatistics, has been added to conduct the workers' compensation study. Ken Light has been an audiovisual consultant while Fred Decker served as a consultant for art work.

## CHAPTER 1 Introduction to Occupational Health and Safety

Most of the perhaps 80 million men and women in the United States labor force spend one-half their waking hours at work; most are exposed at some time to occupational safety or health hazards. Some jobs are, of course, more dangerous than others. The more obvious safety hazards are easy to pinpoint. Nevertheless, thousands of workers die each year from job-related injuries or diseases.

Detecting health hazards is especially difficult. Physicians rarely recognize occupationally-related diseases when workers seek medical care. Companies often fail to realize or else ignore the connection between a disease and a particular substance used in the work environment. So, workers may never link their job with their symptoms.

1972 figures indicate that 14,000 persons are killed every year in work accidents. About 10 million injuries occur each year leaving some 2.2 million workers disabled. And, these figures probably grossly underestimate the numbers actually injured each year in work accidents. Even more difficult is accurately counting the numbers of workers killed or made ill by diseases caused by exposure to substances used on the job. Clearly, the toll is high. A 1972 government report estimated that 350,000 persons may become ill and 100,000 die each year from occupational exposure to such agents as dusts, fumes, chemicals, noise, and

vibration. As young workers, you are in a position to try changing this situation.

A. This country has a long history of death on the job. Yet, only dramatic disasters have successfully aroused American public interest in occupational safety and health. For example, New York passed its compensation law only after a 1911 Triangle Shirtwaist fire killed 146 women trapped in the sweatshop without fire escapes. The 1930-31 Gauley-Bridge disaster in West Virginia was even more shocking. By 1935, when the story finally broke, nearly 500 workers had died (167 of them buried on the job) and 1500 were disabled from tunneling through a mountain with a very high level of silica. Though the disaster spurred amendment of West Virginia law to compensate workers suffering from silicosis, the families of most of the Gauley-Bridge dead and disabled never received any compensation.

Nothing was done to protect coal miners until a Farmington, West Virginia explosion killed 78 miners in 1968. The coal mine Health and Safety Act was passed the next year, in 1969. Yet research in the 1950's and 1960's had shown that coal miners died at twice the rate of other workers and suffered more lung diseases, heart ailments, and other diseases than expected for the general population.

From impetus provided by the Coal Mine Health and Safety Act, Congress finally passed the Occupational Safety and Health Act in 1970 to protect

all working people.

B. Who is doing work in this field?

1. Federal Agencies

Responsibility for carrying out the provisions of the 1970 Occupational Safety and Health Act is divided between the Department of Labor's Occupational Safety and Health Administration (OSHA) in Washington, D.C. and the Department of Health Education and Welfare's National Institute for Occupational Safety and Health (NIOSH), with offices in Rockville, Maryland, and in Cincinnati, Ohio.

There will be much more information later about the specific role that each federal agency plays, but briefly:

OSHA is responsible for setting and enforcing standards, conducting inspections of workplaces, ensuring that employers maintain records of their health and safety experience, and for working with states developing plans to set and enforce state occupational safety and health standards.

NIOSH is responsible for developing recommendations to be used by the Department of Labor when setting Federal standards, for conducting research on occupational diseases, and for conducting Health Hazard Evaluations of toxic substances in workplaces when employees request them.

2. State Agencies

A provision in the Federal OSHA law allows states to develop and

administer their own occupational safety and health plans if the state plans are "at least as effective as" the federal law. The two agencies which administer California's state plan (CAL/OSHA), are:

The Division of Industrial Safety/(DIS), an agency within California's Department of Industrial Relations/(DIR), is primarily responsible for conducting inspections of workplaces to insure standards enforcement.

The Department of Occupational Health/(DOH), within the State Department of Public Health, issues proposals for recommended standards to the CAL/OSHA Standards Board. (The Board then holds hearing and issues standards which the DIS enforces.) DOH industrial hygienists, specialists trained to recognize and control industrial hazards, help the DIS make inspections for health, though not safety, violations.

### 3. LABOR UNIONS

Interest in occupational safety and health has been increasing among labor union officials and staff members during the last few years. The AFL-CIO's Industrial Union Department specialist, Sheldon Samuels, works full-time on health and safety matters. Three international unions -- the United Auto Workers (UAW), the Oil, Chemical and Atomic Workers (OCAW), and the United Rubber Workers (URW) -- have especially good programs:

The United Auto Workers, with headquarters in Detroit where the major automobile manufacturers are located, is the third largest

United States union. Its professional health and safety staff, including three industrial hygienists and two safety engineers, is currently studying UAW members' exposure to lead at storage-battery manufacturing plants. UAW's 1973 contracts with the major auto manufacturers spelled out comprehensive health and safety provisions: at least 300 local union health and safety representatives, trained by UAW, deal with hazards in their own plants full time and conduct weekly plant inspections; corporations provide local joint labor/management health and safety committees with monitoring equipment to measure noise, carbon monoxide, and air flow; a national labor/management health and safety committee was set up; and, corporations inform workers about potentially hazardous substances in their work environments, provide protective equipment, pay for medical examinations, and make findings of health and safety surveys available to UAW.

United Rubber Workers Union (formally the United Rubber, Cork, Linoleum and Plastic Workers of America, AFL-CIO) members, exposed to thousands of different chemicals every day, work in one of the most hazardous industries in the country. The URW's two staff industrial hygienists survey plant hazards unresolved by local safety committees through normal grievance procedures. In 1970, a unique arrangement for studying occupational health problems was written into URW's contracts with the six major tire manufacturers; the companies pay 1/2 ¢ per hour per worker into a fund for occupational health plant surveys and epidemiological research. Now, approximately \$750,000 per year is spent on studies conducted by the Harvard and North Carolina Schools of Public Health. Early results indicate rubber workers suffer an excess of deaths from leukemia, heart disease, and gastro-intestinal diseases. Eventually, the occupational health specialists from the Schools of Public Health will use their findings to suggest environmental controls, future occupational health programs, and new OSHA standards.

The Oil, Chemical and Atomic Workers International Union, one of the most progressive unions in health and safety although its membership numbers only 200,000, has been involved in educational, legal, medical, and technical areas of occupational health through its Denver-located technical and Washington-located legislative staffs. The OCAW Denver office publishes an excellent monthly newsletter, Lifelines. OCAW called a strike against Shell Oil Company between January and June 1973, primarily for Shell's failure to (a) establish a joint health and safety committee, (b) conduct independent (noncompany) occupational health plant surveys, (c) conduct medical examinations at company expense and (d) inform the union each year about illnesses and deaths. Though only two demands were won (a and d), the strike did demonstrate OCAW members support of occupational health and safety demands and interest in careful health and safety monitoring. Since 1966, with the cooperation of medical scientists throughout the country, OCAW has conducted training sessions for union members. In December 1972, OCAW and the Health Research Group in Washington, D.C. together asked the U.S Department of Labor to set standards for 10 cancer-causing chemicals; OCAW members had died from exposure to these chemicals on the job. The final standards for these 10 chemicals and 4 others were published in 1973. OCAW eventually sued the Labor Department on the grounds that the standards did not sufficiently protect workers.

#### 4. THE SCIENTIFIC COMMUNITY

In the past, most studies of plant conditions and workers' health and safety have been conducted by corporation staff. Recently, "independent" (without direct financial ties to the company) scientists have begun doing occupational health research. One particularly active group is:

Mt. Sinai Environmental Sciences Laboratory, New York City, staffed by physicians and scientists under Dr. Irving Selikoff's direction, does laboratory research to test the effects of particular chemicals and substances on laboratory animals, and epidemiological research to determine whether workers from particular occupations suffer unusual rates of illness or death from certain diseases. One study has followed 632 asbestos workers since 1943. Statistically, 305 should have died by now; 456 have died. The incidence of lung cancer in this group was eight times higher than expected for the general population. Dr. Selikoff and his co-workers have conducted other epidemiological studies, many under union auspices, on the plastics, roofing, printing, and other hazardous industries. The results are published and presented to government bodies with the hope that safer work practices and standards will be developed for industrial chemical use.

#### 5. PUBLIC INTEREST GROUPS

A number of "public interest" groups that have sprung up around the country in the past few years are attempting to insure that citizen and worker voices be heard when decisions affecting them are made. These groups of professionals are active in consumer, environmental, equal opportunity, health, and safety issues.

Two national groups located in Washington, D.C. -- Environmental Defense Fund and the Health Research Group -- have testified at OSHA hearings on occupational health standards and filed written comments with OSHA on proposals for new health standards. The Environmental Defense Fund sued the Environmental Protection Agency for not banning

certain pesticides known to be hazardous. The Health Research Group asked several federal agencies to ban the use of the cancer-causing chemical vinyl chloride as an aerosol spray propellant.

Other public interest groups focus on local problems, on state or local agencies and law enforcement. For example, the San Diego Committee for Occupational Safety and Health, a group of scientists, public health people, and labor union members, has been fighting to improve that city's shipyard workers' conditions.

Two other examples of active public interest groups involved in occupational health problems are:

Chicago Area Committee for Occupational Safety and Health (CACOSH), a coalition of union locals, medical and technical people, and pro-labor lawyers, is both a service and a political action group, providing medical, technical, and educational assistance to unions or other groups trying to improve their working conditions. Leading the battle for stronger health and safety legislation and stiffer enforcement, CACOSH has been actively urging stricter enforcement of OSHA's noise standard and a stricter new standard. The group participates in educational sessions and courses, showing slides about the effects of exposure to certain substances and explaining strategies for correcting these hazards at the workplace. This fall, for example, CACOSH is helping conduct a health and safety course for Steelworkers in the Chicago area. Other COSH groups exist in Pittsburgh, San Francisco and Seattle.

Urban Planning Aid (UPA), Industrial Health and Safety Project in Cambridge, Massachusetts, a nonprofit organization, provides medical, legal, and technical consultation on occupational health to local unions in Eastern Massachusetts. Its full-time paid staff (unlike many of the COSH groups which, without funding, have mostly volunteer staff) includes organizers, researchers, and writers. The project publishes a monthly newsletter, Survival Kit, to help Massachusetts groups stay in touch with each other and share experiences in coping with occupational health problems. UPA's other publications, written for local union use, include a noise pamphlet and a guide for unionists on how to use the Occupational Safety and Health Act. UPA also trains groups of Massachusetts workers to identify hazards, correct them, and to understand their legal rights to a healthful, safe workplace.

## CHAPTER 2 Occupational Safety and Health Legislation

### 1. FEDERAL LAW

On December 29, 1970 Congress enacted the Occupational Safety and Health Act (OSH Act) into law (P.L. 91-596) to "... assure so far as possible every man and woman in the Nation safe and healthful working conditions and to preserve our human resources..."

The OSH Act:

Encourages employers and employees to reduce hazards in the workplace and initiate new or improve existing safety and health programs

Designates employer and employee rights and responsibilities

Authorizes the Occupational Safety and Health Administration (OSHA) to set mandatory safety and health standards

Provides an effective enforcement program

Encourages states to administer and enforce their own occupational safety and health programs that are at least as effective as the federal program

The OSH Act covers every employer in a business affecting commerce who has one or more employees, an estimated 57 million workers and 4.1 million workplaces in the United States and its territories. The OSH Act does not affect workplaces covered under other federal laws, such as the Coal Mine Health and Safety Act and the Federal Metal and Nonmetallic Safety Act.

The Act covers federal employees only to the extent that the head of each federal agency must maintain a comprehensive occupational safety and health program. The Act's enforcement procedures are not applicable to federal agencies.

Likewise, the Act does not cover state or local public agencies.

Individual states must assume responsibility for such employees through either new or existing state legislation and satisfactory assurance to the Secretary of Labor that a state plan will be applicable to all state and local employees.

#### A. Administration and Enforcement

The Occupational Safety and Health Act created two federal agencies to

administer and enforce its program.

The Occupational Safety and Health Administration (OSHA), under the Department of Labor, sets and enforces standards, prescribes regulations requiring employers to maintain accurate safety and health records, and assists states in identifying their own safety and health needs and developing plans enforcing federal standards.

The National Institute for Occupational Safety and Health (NIOSH), under the Department of Health, Education, and Welfare, conducts relevant research, develops criteria for handling toxic substances in consultation with the Department of Labor, determines agent toxicities on employer or employee request, publishes an annual list of toxic substances, and conducts training programs for federal enforcement personnel.

The OSH Act also establishes: a twelve-member National Advisory Committee representing labor, management, occupational safety and health professions, and the public; a three-member, appointed Occupational Safety and Health Review Commission, an independent Executive Branch agency, which hears and decides on appeal cases.

#### B. Employer Responsibilities

Generally, provide a place of employment free from recognized hazards and comply with occupational safety and health standards promulgated under the Act

Make sure the workplace conforms to applicable safety and health standards

Remove or guard hazards

Make sure employees have and use safe, properly maintained tools and equipment, including required protective gear

Warn employees of potential hazards by color codes, posters, labels, or signs

Provide and pay for medical examinations required by OSHA standards

Record work-related injuries and illness (for 8 or more employees), and post a summary annually during the entire month of February

Report each injury or health hazard resulting in a fatality or hospitalization of 5 or more employees to the nearest OSHA area office

Post the OSHA poster in the workplace to inform employees of their rights and responsibilities

Not discriminate against employees properly exercising their rights under the Act

Post OSHA citations for standards violations at the worksite involved

#### C. Employer Rights

Request and receive "proper" identification of OSHA personnel prior to their inspecting the workplace

Participate in OSHA compliance officers' walkaround inspections of the workplace and the opening and closing conferences

Disagree with OSHA citations by filing a Notice of Contest with the OSHA regional office within 15 working days of having received the citation (and notice of penalty)

Apply to OSHA for a temporary variance from a standard if compliance is impossible

Apply to OSHA for a permanent variance from a standard if able to prove that an alternative protective method is at least as effective as that required by the standard

#### D. Employee Responsibilities

Read the OSHA poster at their worksites

Comply with any applicable OSHA standards

Wear or use prescribed protective equipment

Report hazardous conditions to their supervisors

Report any job-related injuries or illnesses to their employers, and promptly seek treatment

Cooperate with OSHA compliance officers conducting inspections and answer any questions they may ask about jobsite conditions

#### E. Employee Rights

Request information from their employers on health and safety hazards in the work area, on necessary precautions, and on what to do if involved in an accident or exposed to a toxic substance

Accompany OSHA compliance officers during walkaround inspections if author of a complaint to OSHA or if designated by the union or employee association

Observe monitoring or measuring of hazardous materials, and have access to the records on these materials

Submit a written request to NIOSH for information on potentially toxic substances in their workplace, and have their names withheld from their employers if desired

File a written complaint with the OSHA area director, requesting an inspection for believed hazardous conditions in the workplace, and have their names withheld from their employers

Be advised of OSHA actions on their complaints and have an informal review of any OSHA decision not to inspect the workplace

File a complaint to OSHA within 30 days if they believe themselves discriminated against for exercising their rights under the OSH Act

Object to the abatement period fixed in the citation by appealing to the Occupational Safety and Health Review Commission

Be notified by their employers of any application for variance from an OSHA standard, testify at variance hearings, and appeal the final decision to the Occupational Safety and Health Review Commission

## 2. STATE LAW -- CAL/OSHA

California's passing of the California Occupational Safety and Health Act (CAL/OSHA) on October 2, 1973 was in response to a Federal OSH Act provision encouraging state-run programs to replace the federal program if at least as effective as the federal program and if they cover public as well as private employees in the state. CAL/OSHA began enforcement activities on January 2, 1974.

CAL/OSHA covers city, county, state, private, and corporation employees. To carry out its program, CAL/OSHA receives federal matching funds. In return, the state program must comply with federal law, federal guidelines, and federal supervision.

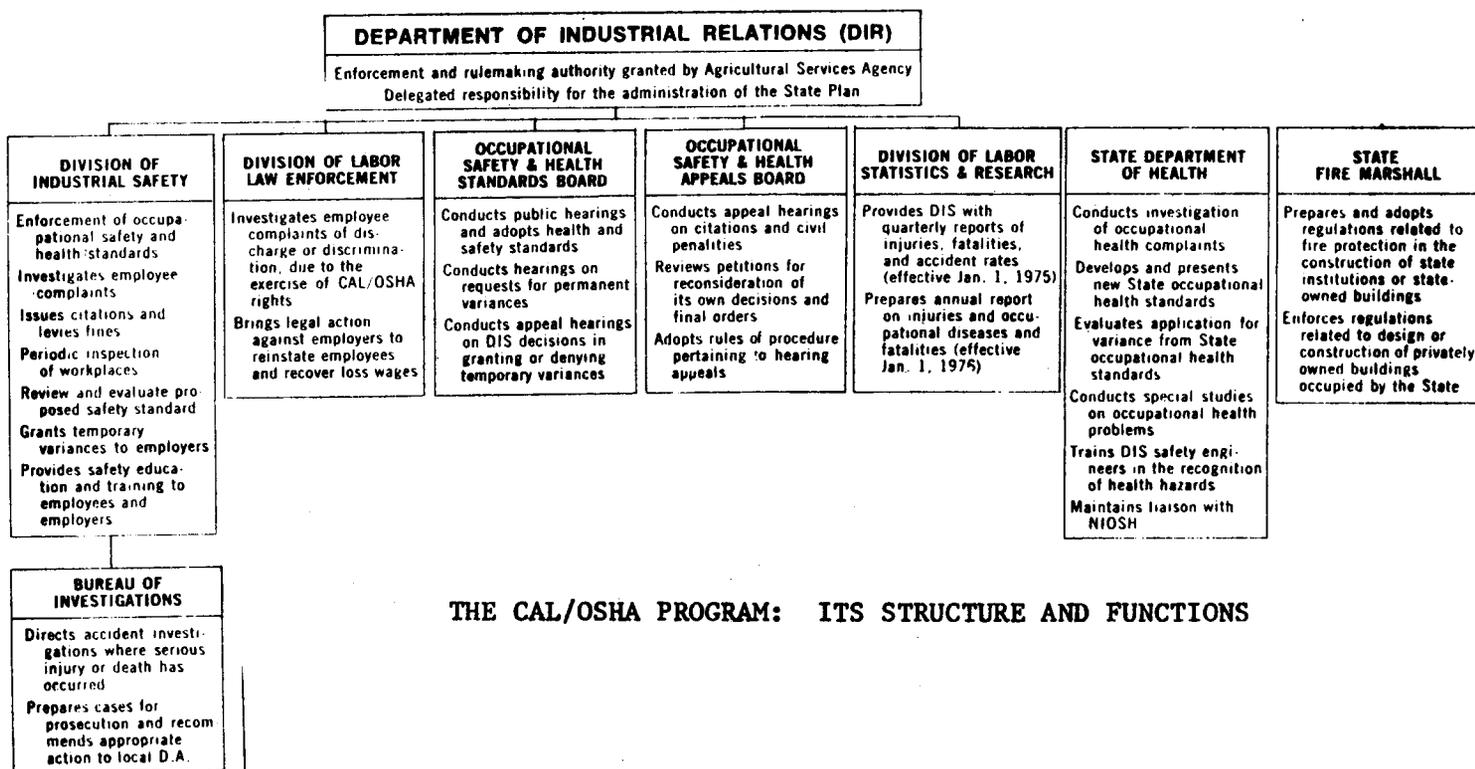
### A. Administration and Enforcement

Under CAL/OSHA the State Division of Industrial Safety (DIS) is responsible for insuring that all places of employment are safe and comply with applicable health and safety standards. To accomplish this, the DIS prepares and distributes information on the prevention of occupational accidents and diseases, and provides occupational health and safety

training and job-safety-and-health consultation upon request.

The DIS also has broad investigatory powers to inspect workplaces for violations of safety and health standards. DIS inspectors finding violations must inform the employer in writing and require the employer to correct the problem. The law protects employees from employer discrimination or retaliation for exercising employee rights under the law.

The following CAL/OSHA organizational chart outlines the program's major departments and responsibilities.



THE CAL/OSHA PROGRAM: ITS STRUCTURE AND FUNCTIONS

**B. Employer Responsibilities**

Generally, provide safe and healthful places of employment

Construct safe and healthful places of employment

Neither require nor permit employees to work in places that do not meet (federal) safety and health standards

Provide and use safety devices and safeguards

Adopt and use safe methods and practices

Do everything possible to protect employees' lives, safety, and health

Post information on employee protections and obligations under the CAL/OSHA law

Prominently post each citation issued or a copy at or near the violation site

Allow employees or their representatives to observe monitoring or measurement of employee exposure to hazards

Allow employees' (or their representatives) access to accurate records of employee exposures to potentially toxic materials or harmful physical agents

Notify any employees who have been or are being exposed to toxic materials or harmful physical agents in concentrations or at levels exceeding allowable standards, and inform such employees of corrective action

Post warnings (labels or other forms) of all hazards to which employees are exposed, relevant symptoms, appropriate emergency treatment, and proper precautions

Inform employees of the results of any medical examination or test made at the employer's expense in connection with occupational safety and health

File a complete report with the Division of Labor Statistics and Research of every work injury or occupational illness which disables an employee through the day or requires more medical service than ordinary first-aid

Immediately report every case involving a serious injury, illness, death to DIS by telephone or telegraph

### C. Employee Rights

File a complaint with the DIS requesting an investigation of known or suspected unsafe or unhealthful conditions at the workplace, and have their names kept confidential if desired

Not be discriminated against by employers for filing complaints or exercising their rights under the law

Refuse to perform work or follow orders causing any violation of occupational health or safety standards or if the work would cause a hazard to themselves or others, and not be laid off, discharged, or unpaid for such refusal to work

Accompany, or have a representative accompany, the DIS inspector during walkaround inspections of the workplace and consult privately with the DIS inspector following the inspection

Have access to accurate records of exposure to toxic material or harmful physical agents

Challenge the reasonableness of the length of DIS-set abatement period

Participate in hearings resulting from challenges to the abatement period length or an employer's request for (and grant of) a variance

### D. Filing a CAL/OSHA Complaint

It's quite simple for any employee to file a complaint about a job safety or health problem; write a letter or send a completed complaint form to the nearest DIS regional office. If the situation is so serious that someone is likely to be injured or killed before you can write a letter

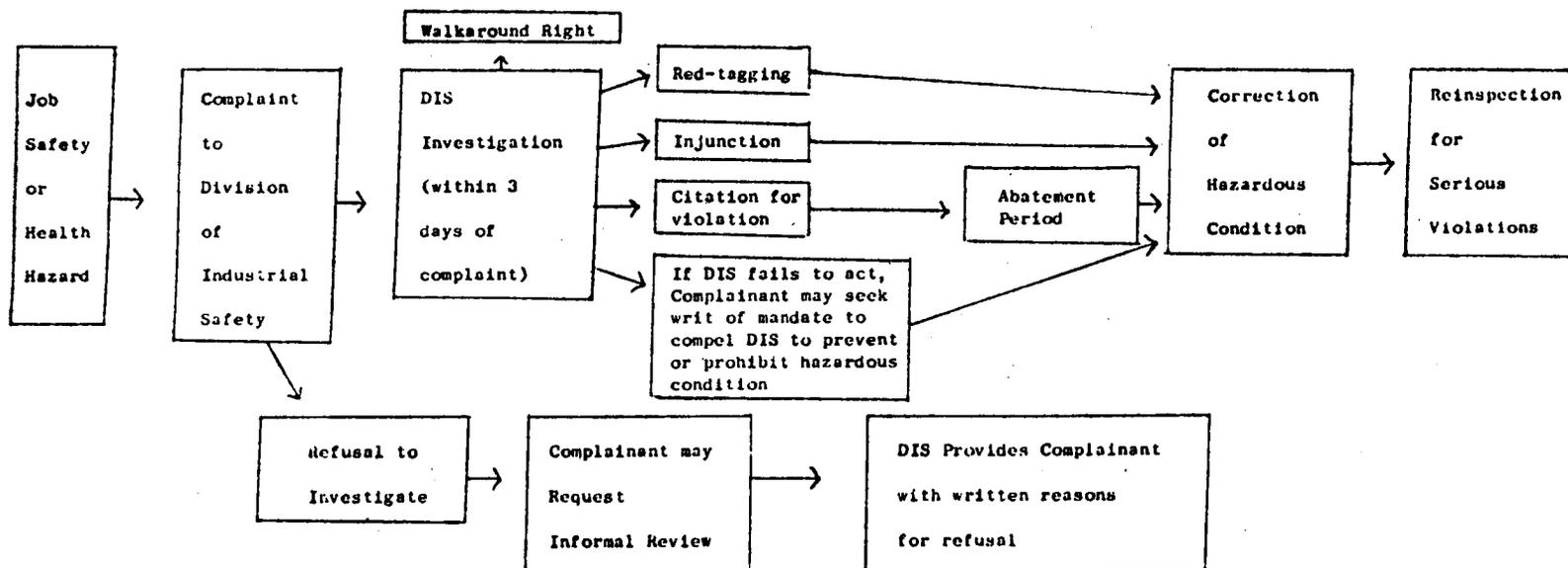
or fill out the form, immediately telephone the nearest DIS office. Then, document the phone call with a brief follow-up complaint letter or form. The written complaint is important. It protects you against employer discrimination or retaliation. It insures that you will be kept informed of DIS's findings. And DIS has a record of your complaint.

The complaint letter or form should contain enough detail for DIS to decide if an inspection is warranted. You are not expected to be an expert, so state the problem in your own words without exaggerating the condition. (See Appendix A for a sample complaint letter and Appendix B for complaint form.)

#### E. After the Complaint is Filed

The DIS must, within three (3) days after receiving an employee's complaint, either send an inspector to the workplace without advance warning or send the employee a letter indicating precisely why there will be no inspections. The DIS's most common reasons for refusing to inspect are insufficient basis, and the complaint was filed for harassment purposes only.

## CAL/OSHA COMPLAINT PROCEDURE



## F. Inspections

A DIS inspector comes to a workplace on a routine inspection or in response to an employee complaint. By showing their credentials upon arrival, inspectors gain free access to any workplace. The employer may have a management representative and employees an employee representative accompany the inspector (or the employee who filed the complaint may do so). If there is no employee representative, the inspector must interview a reasonable number of employees.

During the inspection every employee has the right to discuss health and safety problems with the inspector. Any employee concerned about an unsafe job condition should either inform the employee representative

or the inspector.

Inspectors discovering situations of extreme hazards must prohibit entry into the dangerous area or use of the dangerous equipment by posting a conspicuous notice ("tagging") in the restricted area or near the equipment. From then on, entering the dangerous area or using the equipment is illegal. It is also illegal for anyone to remove the posted notice or for the employer to ask an employee to enter the dangerous area or use the unsafe equipment.

At the end of the walkaround investigation, the inspector must have separate closing conferences with the employer and employee representatives. The conferences may be combined if the employer agrees. During the closing conference, to insure that the inspector has noted all of the employee complaints during the inspection, the employee representative should ask the inspector to verbally review all the specific hazards and violations found. The employee representative should take written notes to inform the affected employees and to later check that all hazards have been corrected.

#### G. After the Inspection

Following an inspection, DIS must issue a citation if the employer has violated a safety or health standard (see Appendix C -- CAL/OSHA Citation Form). Additionally, in the case of imminent danger to employees, DIS may close the plant or process immediately or seek criminal penalties

against the employer, depending upon the violation's seriousness. The DIS may also fine (with the citation) private employers for violating safety or health standards or for failing to correct violations within the time period fixed by the DIS.

In the case of violations, citation forms specifying the specific violations and the time period during which the violation must be corrected (abatement period) are sent to both employer and the employee making the complaint. The fine's dollar amount and the abatement period's length vary according to the violation's seriousness and the difficulty of correcting it.

Employers must post the citation for three(3) days or until the violation is corrected, whichever period is longer. If the citation is ignored and the violation not corrected within the set abatement period, employees should again notify DIS in writing, using a complaint form or letter.

DIS must conduct an informal review of any CAL/OSHA inspector's refusal to issue a citation for a violation. DIS must furnish a written statement explaining such refusal at the employee or employer representative's request.

H. When an Employee is Dissatisfied with CAL/OSHA

The law requires DIS to keep accurate records of all complaints and to

inform employees making a complaint of any action taken and the reasons for such action. Workers filing complaints should receive written notification of DIS's action (or nonaction). If you do not hear from DIS in writing after filing a written complaint, telephone the nearest DIS office to ask why you haven't been informed.

When CAL/OSHA has inadequately performed its responsibilities, a Federal CASPA should be filed. Promptly notify (in writing) the nearest Federal OSHA office if, in your opinion, DIS has failed to: (A) adequately respond to your complaint; (B) conduct a timely or adequate workplace inspection; (C) issue citations for known violations; (D) follow CAL/OSHA rules and regulations; (E) protect your rights against discrimination; or (F) follow proper procedures in granting variances.

On the basis of the information obtained through an independent investigation, the Federal OSHA office will notify you (in writing) of the investigation findings and any corrective action that may result. If the Federal OSHA office determines that there are no reasonable grounds for an investigation, you will be notified in writing of such determination. If you are still not satisfied, you may request an informal conference with Federal OSHA officials. Finally, after considering all written and oral information, Federal officials will affirm, modify or reverse the original decision. Again you will receive a written copy of the final decision.

#### I. Discrimination Complaints

Employee Protection for Filing Complaint: No person shall discharge or in any

manner discriminate against any employee because such employee has filed any complaint or instituted or caused to be instituted any proceeding under or relating to his rights or has testified or is about to testify in any such proceeding or because of the exercise by such employee on behalf of himself or others of any rights afforded him.

Any employee who is discharged, threatened with discharge, demoted, suspended or in any other manner discriminated against in the terms and conditions of such employment by his employer because such employee has made a bona fide complaint to the DIS of unsafe working conditions, or work practices, in his employment, or place of employment shall be entitled to reinstatement and reimbursement for lost wages and work benefits caused by such acts of the employer. Any employer who willfully refuses to rehire, promote, or otherwise restore an employee or former employee who has been determined to be eligible for such rehiring or promotion by a grievance procedure, arbitration, or hearing authorized by law, is guilty of a misdemeanor.

Employee Protection Against Refusal to Perform Unsafe Work: No employee shall be laid off or discharged for refusing to perform work in the performance of which this code, any occupational safety or health standard or any safety order of the DIS or standards board will be violated, where such violation would create a real and apparent hazard to the employee or his fellow employees. Any employee who is laid off or discharged in violation of this section or is otherwise not paid because he refused to perform work in the performance of which this code, any occupational safety or health standard or any safety order of the DIS or standards board will be violated and where such violation would created a real

and apparent hazard to the employee or his fellow employees shall have a right of action for wages for the time such employee is without work as a result of such layoff or discharge; provided, that such employee notifies his employer of his intention to make such a claim within 10 days after being laid off or discharged and files a claim with the Labor Commissioner within 30 days after being laid off, or discharged or otherwise not paid in violation of this section.

Filing a Discrimination Complaint: Any employee who believes that he has been discharged against, by any person in violation of the law may, within 30 days after the occurrence of the violation, file a complaint with the Labor Commissioner alleging the discrimination. Upon receipt of the complaint, the Division of Labor Law Enforcement shall cause such investigation to be made as it deems appropriate. If upon investigation it determines that the provisions of Section 6310 or 6311 have been violated, it shall bring an action in any appropriate court against the person who committed the violation. In any such action the courts shall have jurisdiction, for cause shown, to restrain violations of the law and order all appropriated relief including rehiring or reinstatement of the employee to his former position with back pay.

Within 30 days of the receipt of a complaint pursuant to this section, the Division of Labor Law Enforcement shall review the facts of the employee's complaint, set a hearing date or notify the employee and the employer of its decision, and, where necessary, begin the appropriate court action to enforce such decision.

Points to Consider in Filing a  
DISCRIMINATION COMPLAINT

- (1) *Be specific regarding which section of the law applies (6310/ filing a complaint; or 6311/ refusal to work)*
- (2) *Be prepared to submit a complete statement of the facts, including all relevant names, dates.*
- (3) *Be prepared to supplement your statement with all relevant documents, state reports, correspondence, etc.*
- (4) *Select your most supportive witnesses and review their testimony prior to the hearing.*
- (5) *If possible, always attempt to have a union representative or legal counsel present your case.*
- (6) *If you are a health and safety committee person, submit a letter of authorization from your local union President.*
- (7) *Be prepared to have someone take notes at the hearing. Such notes will be useful in case of an unreasonable adverse decision.*
- (8) *If there is an unreasonable adverse decision, forward a letter to the hearing officer and request a rehearing. (Refer to your notes, taken at the hearing, as a basis for reconsideration.)*
- (9) *If you then receive an inadequate response, forward a letter of complaint to the office of the Chief of DIS. Again request a rehearing.*
- (10) *If you then receive an inadequate response, file a CASPA with Federal OSHA.*

EXAMPLE - LETTER OF COMPLAINT

Chief  
California Division of Industrial Safety  
455 Golden Gate Avenue  
San Francisco, CA 94102

Dear Sir or Madam:

This letter is a formal request for an inspection with regard to safety and health hazards at the Blank City Municipal Shops located at 000 Industrial Drive, Blank City, CA.

Problems are as follows:

1. Unguarded belts on machinery.
2. Frayed electrical wiring on portable tools.
3. Poor housekeeping - fire hazard.
4. High noise levels on woodworking machinery.
5. Paint spray mist in paint shop.
6. What is the hazard from the solvent used to strip paint off of old desks? Men also use this to wash their hands.
7. Air is full of dust in the sandblasting department.
8. People who work in the auto body shop seem to have lots of skin rashes on their hands and legs.
9. Food from the vending machine in the locker room is often spoiled.
10. There are no drinking fountains.
11. Chemical odors from the duplicating machines worry the operators as to possible effects on their health.

Additional problems will be brought to the attention of your field representative during the walk-around inspection. The following are employee representatives who will be available to participate in the walk-around inspection:

Day shift - name, location, phone number  
Afternoon shift - name, location, phone number  
Night shift - name, location, phone number  
(Include the above list of names if appropriate)

In accordance with CAL/OSHA, I wish to receive copies of any notices, citations or findings resulting from the inspection and to be kept fully informed of your progress.

I do not want my name revealed to the employer. (This last sentence may be left out if you are not concerned about the employer learning your identity or if you are employee representative.)

Sincerely,

Sign your name here  
Insert mailing address here

NOTE: Keep a carbon copy for your files.

**APPENDIX B  
COMPLAINT**

STATE OF CALIFORNIA  
DEPARTMENT OF INDUSTRIAL RELATIONS  
DIVISION OF INDUSTRIAL SAFETY

**CONFIDENTIAL**

<p><b>Complainant's Name</b> _____  <small style="margin-left: 250px;">Type or Print</small></p> <p><b>Position</b> _____</p> <p><b>Address</b> _____  <small style="margin-left: 250px;">Street</small></p> <p>_____ <small style="margin-left: 150px;">City</small> _____ <small style="margin-left: 100px;">Zip Code</small></p> <p><b>Telephone</b> _____  <small style="margin-left: 50px;">Area ( ) Home</small> _____ <small style="margin-left: 150px;">Area ( ) Office</small></p>	<p><b>For Office Use Only</b></p> <p>A. Region _____ Rec'd By _____ Date _____</p> <p>Telephone <input type="checkbox"/> Written <input type="checkbox"/> Oral-In Person <input type="checkbox"/></p> <p>B. District _____ Rec'd/Reg: Date _____  <small style="margin-left: 200px;">Time _____</small></p> <p>C. District _____ Rec'd By _____ Date _____</p> <p>Telephone <input type="checkbox"/> Written <input type="checkbox"/> Oral-In Person <input type="checkbox"/></p> <p>D. Complaint Log No. _____</p>
---	---

**Complaint (Check one)**

Employee

Representative of employees

If you are a representative of employees, state the name of your organization: \_\_\_\_\_

Other (specify) \_\_\_\_\_

believes that a violation at the following place of employment of an occupational safety or health order exists which is a job safety or health hazard.

Does this hazard(s) immediately threaten death or serious physical harm?  Yes  No

**Employer's Name** \_\_\_\_\_

**Address** \_\_\_\_\_

Street

**Telephone ( )** \_\_\_\_\_  
Area

\_\_\_\_\_ City

\_\_\_\_\_ Zip code

1. Kind of business \_\_\_\_\_

2. Specify the particular building or worksite where the alleged violation is located, including address. \_\_\_\_\_

3. Specify the name and phone number of employer's agent(s) in charge. \_\_\_\_\_

4. Describe briefly the hazard which exists there including the approximate number of employees exposed to or threatened by such hazard. \_\_\_\_\_

(Continued on reverse side)

5. List by number and/or name the particular order(s) or code(s) which you claim has been violated, if known.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. (a) To your knowledge has this violation been considered previously by any Government agency? \_\_\_\_\_

(b) If so, please state the name of the agency \_\_\_\_\_

(c) and, the approximate date it was so considered. \_\_\_\_\_

7. (a) Is this complaint, or a complaint alleging a similar violation, being filed with any other Government agency?

(b) If so, give the name and address of each. \_\_\_\_\_

8. (a) To your knowledge, has this violation been the subject of any union/management grievance or have you (or anyone you know) otherwise called it to the attention of, or discussed it with, the employer or any representative thereof? \_\_\_\_\_

(b) If so, please give the results thereof, including any efforts by management to correct the violation. \_\_\_\_\_

9. Please indicate your desire:

I do not want my name revealed to the employer.

My name may be revealed to the employer.

*Continue Item 4 here, if additional space is needed.*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(Date)

(Signature of Complainant)

Complaint handled by: \_\_\_\_\_ Date \_\_\_\_\_

Engineer Signature



VISION OF INDUSTRIAL SAFETY

1. Office: \_\_\_\_\_

2. TO: \_\_\_\_\_

CITATION

3. Page \_\_\_\_\_ of \_\_\_\_\_

4. Type of alleged violation(s): \_\_\_\_\_

5. Citation Number \_\_\_\_\_

6. An inspection or investigation of a place of employment located at \_\_\_\_\_ was conducted by \_\_\_\_\_ on \_\_\_\_\_ 197\_\_\_\_. This citation is being issued in accordance with California Labor Code Section 6317 for alleged violations as shown below that were found during that inspection. (LC refers to California Labor Code; CAC refers to California Administrative Code.)

7. Item No.	8. Standard, order, regulation or code allegedly violated	9. Description of alleged violation	10. Date by which alleged violation must be corrected

11. Signature \_\_\_\_\_  
 Signature \_\_\_\_\_ Safety Engineer  
 12. Signature \_\_\_\_\_  
 Name \_\_\_\_\_ District Manager Date of Issuance \_\_\_\_\_

Citation(s) or a copy thereof must be prominently posted upon receipt by the employer at or near the location of each alleged violation until the unsafe condition is corrected or for three working days, whichever is longer.

Violations of the provisions of the California Labor Code or of safety and health standards, orders or regulations promulgated under the Labor Code may result in a civil penalty imposed on the employer and may result in some instances in a prosecution for a misdemeanor. If a monetary penalty is assessed, the employer will be notified promptly. The employer has fifteen working days after receipt of the above citation within which to notify in writing the California Occupational Safety and Health Appeals Board, 1006 - 4th Street, Sacramento, CA 95814, of his intention to contest any alleged violation or abatement period. The above citation will become a final order of the Appeals Board not subject to review or appeal unless contested by the employer, an employee or employee's representative. Failure to abate the unsafe condition within the time specified may result in an additional proposed penalty of up to \$1,000 being assessed for each day beyond the abatement period the unsafe condition is not abated.

An employee or his representative may contest in writing to the California Occupational Safety and Health Appeals Board the reasonableness of the abatement period within fifteen working days from the date of issuance of the citation. Forms for use by an employee or the employer in presenting appeals to the Board are available from District Offices, Division of Industrial Safety.

13. Region \_\_\_\_\_ District \_\_\_\_\_ Ident. No. \_\_\_\_\_ CAL/OSHA 1 Rep. No. \_\_\_\_\_



STATE OF CALIFORNIA — AGRICULTURE AND SERVICES AGENCY  
DEPARTMENT OF INDUSTRIAL RELATIONS  
DIVISION OF LABOR LAW ENFORCEMENT  
STATE LABOR COMMISSIONER

Claim No. ....

*Please Print All Names and Addresses*

Withholding Tax Exemptions. ....

Your Name (Employee) ..... Social Security No. ....

Your Address .....  
Street and number City Zip Code

Your Telephone No. .... Kind of work done (occupation) .....

**AGAINST**

EMPLOYER .....  
Individual   
Partnership   
Corporation   
Or any other person or persons responsible therefor

Address of employer .....  
Street and number City

Telephone No. .... Employer's business .....

Work done at ..... City ..... County .....

Name of superintendent or person in charge ..... Hired by .....

Wage rate promised: \$ ..... per ..... Place where hired .....

Quit?  Discharged?  Date ..... If quit, did you give your employer 72 hours notice before quitting? .....  
City or county Yes or No

Reason for quitting or discharge .....

Have you asked for your wages? ..... On what date? .....

Reason given by employer for failure to pay .....

**GROSS WAGES CLAIMED (Do not Deduct Payroll Taxes)**

From 19..... to 19..... being .....  
Number of hours, days, weeks, or months  
the rate of \$ ..... per .....  
Hour, day, week, month

TOTAL \$ .....

Less any amounts received such as cash advanced, credit for board, room, etc. (itemize): .....

Minus total of amounts and credits received . . . \$ .....

Amount or Balance Claimed . . . \$ .....

**STATEMENT OF FACTS (Use additional sheet if necessary)**

I HEREBY CERTIFY, That this is a true statement of wages due me to the best of my knowledge and belief. I hereby assign all wages and all penalties accruing because of their non-payment, and all liens securing them, to the Labor Commissioner of the State of California to collect in accordance with law.

I authorize the Labor Commissioner and his deputies and agents to receive, endorse my name on, and deposit any checks or money orders obtained as payment on this claim.

If I do not call for money paid on this claim, I hereby authorize the mailing of it, at my own risk.

I hereby authorize the Labor Commissioner to approve a proposed compromise adjustment or settlement of this claim unless I object in writing to such proposal within ten days after notification is mailed to me to the address given by me to the Labor Commissioner. In furtherance hereof, I authorize the Labor Commissioner to transfer, sell or assign this claim or any judgment obtained thereon.

If I do not request return of any papers submitted by me in connection with this claim, I hereby authorize the Labor Commissioner to destroy them after five years.

[SIGNED] .....

Address .....

DO NOT WRITE BELOW THIS LINE

Date ..... District office ..... Complaint taken by .....

Can these wages be secured by lien? ..... Lien rights expire on ..... 19.....

Do Not Write on This Side—For Office Use Only

NON-PAYMENT OF WAGES

'M' FILE NO.

Complainant

Against

NO. Assigned to: Date: Reassigned: Date: Reassigned: Date: Date entered: Date reopened: Date {transferred} Date {referred} From Office:

Address: Changed on: TO: Changed on: TO: Changed on: TO: Date Final Disposition

Verified Wages \$ As \$ Deum. W.T. Penalties \$ Compro. 12 Due to Claimant \$ Conceded 11 Pay Day Penalties Due State \$ Costs Due State (Court-Subp. etc.) \$ Total Due Claimant and/or State \$ Deputy: Notes:

Reassigned: Date: Reassigned: Date: Date entered: Date reopened: Date {transferred} Date {referred} From Office:

Recovered: For Claimant For State Paid Direct \$ XXXXXXXXXX Paid DLE \$ XXXXXXXXXX Deductions \$ XXXXXXXXXX Totals Recov'd \$ \$

RECORD OF RECEIPTS

RECORD OF PAYMENTS TO CLAIMANT

Table with columns: Dismissed or Closed Due to: (X) Deputy, Withdrawn by Claimant, Certified to Small Claims, Insufficient Evidence, Uncollectible—as to Balance, Claimant failed to cooperate, Referred to Civil Action, Uncollectible—Totally, Failure to locate Employer, Failure to locate Claimant, Balance Referred to Civil, Other Agency Jurisdiction, Expiration of Statute, Invalid, Trnsfd. to DLE at: Other reason (specify below)

Table with columns: Date Received, Cash, Check, Etc., Receipt Number, Amount, Division Check No., Date Paid, Balance Due, Signature Remarks

Table with columns: Pends: DATE, DATE, DATE, DATE, DATE, DATE

CITATIONS Table with columns: KIND, DATE, HOUR, REMARKS

Disposition Entered: Register Date: Form 935 BF Mailed Date: Batch Control Statistics

**IMPORTANT DEADLINE!** This appeal must be filed with the Division of Industrial Safety or the Appeals Board within 15 working days of the issuance of a citation.

STATE OF CALIFORNIA  
OCCUPATIONAL SAFETY AND HEALTH APPEALS BOARD

IN THE MATTER OF

Employer \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**EMPLOYEE APPEAL**

Docket No. \_\_\_\_\_

(Leave Docket Number Blank: To be filled in by Appeals Board)

(Please attach a copy of the citation and/or Notice of Civil Penalty to this form.)

This is an appeal by \_\_\_\_\_

from Citation No. \_\_\_\_\_, dated \_\_\_\_\_

It is alleged that the period of time fixed in the citation for the abatement of the violation is that:  
*(Note: State here specifically what is unreasonable about the time allowed.)*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please send all future notices and correspondence to:

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Phone)

\_\_\_\_\_  
(Type or print name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Social Security Number)

\_\_\_\_\_  
(Signature)

## UNDERSTANDING HEALTH STANDARDS (TLV's) or ALLOWABLE AIRBORNE CONCENTRATION

### I. Background.

When OSHA came into existence, the agency adopted the then current recommendations of airborne concentration limits and incorporated these into law as the standards. The American Conference of Governmental Industrial Hygienists (ACGIH) and the American National Standards Institute (ANSI) were the two organizations that had developed these recommendations. Previously neither organization had an official status but were considered "concensus standard organizations". Most of the health standards that OSHA now has are these recommendations that were present in 1970. Since that time OSHA has developed health standards for asbestos, vinyl chloride, 14 other carcinogenic substances, and coke oven emissions. There have been other proposed standards, but none have been adopted.

NIOSH has the responsibility to develop and submit to OSHA recommendations for health standards. These are done in a document called the "criteria document". Thus far, NIOSH has submitted many criteria documents; however, OSHA has not acted on most.

### II. What is a TLV?

**Definition:** The maximum air level of a substance to which a worker can be exposed, averaged over an 8-hour working day. TLV's are aimed at protecting "nearly all workers" who may be exposed 40 hours per week and presumably for a working lifetime.

Points to know about TLV's:

1. the TLV is not an arbitrary number;
2. the TLV does not offer absolute protection;
3. the TLV does not equally protect all people, ie., the young, pregnant, or aged;
4. the TLV does not consider interaction of two or more substances in biologic terms
5. the TLV often allows a number (%) of exposed workers to become impaired.

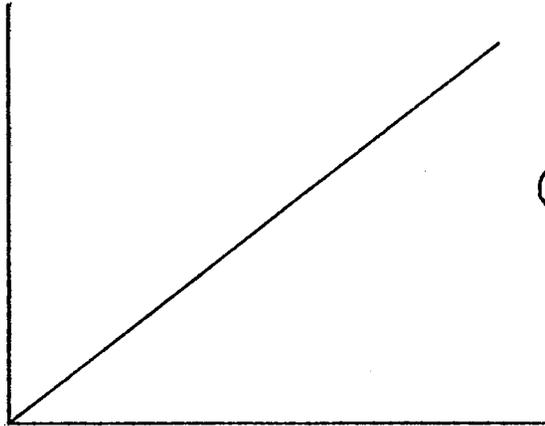
III. How are TLV's set?

A. Questions to ask:

1. How does the substance enter the body?
2. How does the body handle or alter the substance?
3. At what level are harmful effects observed?
  - a) acute effects
  - b) chronic effects
4. Is the TLV to be set for irritant or systemic effects?

B. Dose - Response curves

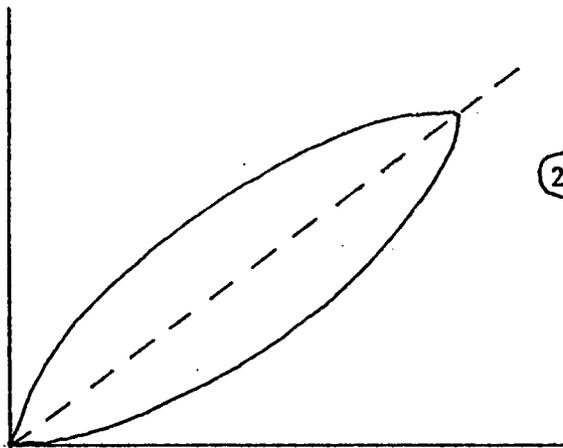
measurable changes  
in number or  
degree of impairment



① THEORETICAL CURVE  
or GRAPH

Concentration of Substance

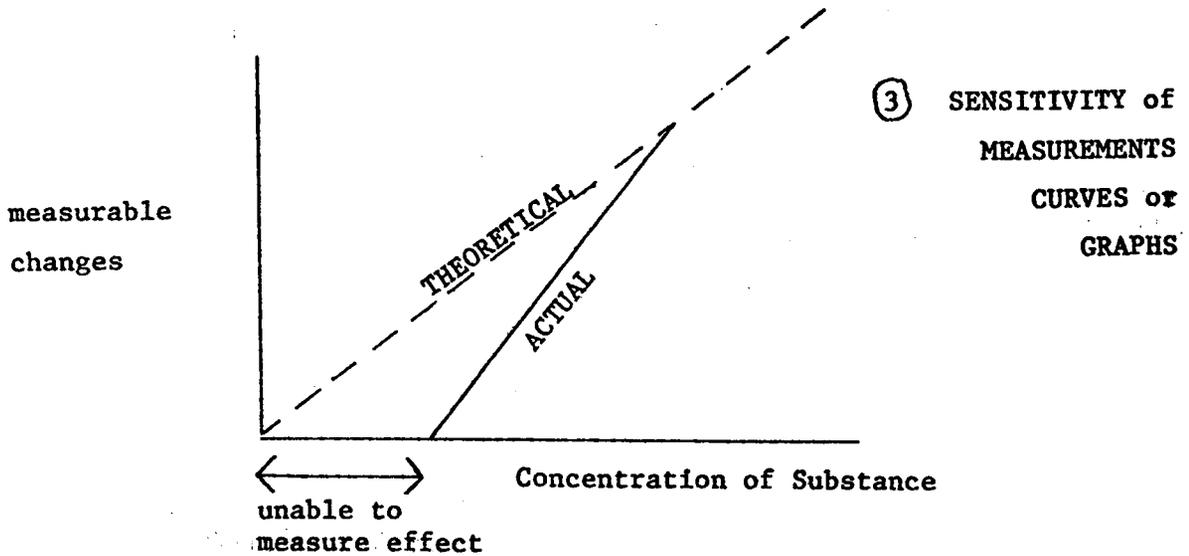
measurable  
changes



② THRESHOLD CURVES  
or GRAPH

What we can perceive  
or measure

Concentration of Substance



There are various types of measurements. Often the measurement is that of overt effects while more subtle or subclinical effects are not looked for. An example is lead poisoning.

C. Types of animal tests:

1. Meaning of LD50 -- lethal dose for 50% of the tested animals or subjects.
2. MLD -- minimal lethal dose
3. Acute tests:
  - a. skin -- irritant effect
  - b. eye -- irritant or blistering effect
  - c. inhalation -- acute test
  - d. oral -- usually lethal dose, MLD or LD50
4. Chronic tests:
  - a. Ingestion
  - b. Inhalation
5. Problems with these tests:
  - a. Acute tests -- are good but do not tell about chronic problems or effects of fetus or pregnancy.
  - b. Chronic tests -- problem of differences in animal species; problem of keeping animals alive for period of test; problem about having sufficient numbers of animals; problems of correlation with humans

Also often takes more than one generation to see effect. A good example is Thalidomide and fetal effects. Thalidomide affects humans only during specific days of early pregnancy, also only affects a few species of animals.

6. Other types of tests:

Bacterial tests like "Ames test". Useful screening test, inexpensive, problem with complete accuracy. Problem with any biological test -- 100% accuracy.

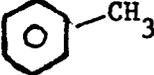
D. What information is used in determining a TLV?

1. animal experiments
2. industrial exposures and epidemiologic results
3. human experiments
4. chemical analogues (similarity between chemicals)
5. bacterial tests and other newer tests.

E. How have the current TLV's been set?

1. 38% are based on human experience and considered long-term effects of exposure to the substance -- many of these TLV's are based on unsound epidemiologic studies.
2. 11% are based on the acute effects seen in human volunteers.
3. 51% are based solely on animal studies
  - a. 27% by animal experiments
  - b. 24% by chemical analogy

IV. The following three pairs A, B, and C are chemicals which have similar structure but different effects. These examples point out some of the dangers of making chemical comparisons.

	<u>SUBSTANCE</u>	<u>TLV</u>	<u>EFFECT</u>
A.	Methanol (wood alcohol) <chem>CH3OH</chem>	200 ppm	blindness (systemic)
	Ethanol (drinking alcohol) <chem>CH3CH2OH</chem>	1000 ppm	drunkenness (narcosis)
B.	Tetrachlorethane <chem>Cl2CHCHCl2</chem>	5 ppm	liver and kidney effects (systemic)
	Tetrachlorethylene <chem>Cl2CCCl2</chem>	100 ppm	narcosis effect (drowsiness)
C.	Toluene 	200 ppm(OSHA) 100 ppm(CAL/ OSHA)	narcosis
	Benzene 	10 ppm	effects on blood (systemic)

There is also a difference depending if the TLV is set for irritant or systemic effects (usually stricter TLV's are used for systemic effects).

V. How to read standards:

- A. Look at handout for OSHA 1910.93 or CAL/OSHA to see list of chemicals by name and allowed amount.

Terms necessary to know:

- a) ppm -- parts per million
- b)  $\text{mg/m}^3$  = milligrams per cubic meter of air
- c) milligram = 1/1000 gram
- d) 28 grams = one ounce or 454 grams = one pound
- e) cubic meter of air is slightly more than a cubic yard of air (one meter = 39.4 inches)

- B. 8 hour time-weighted average:

Example -- toluene

An inspector measures toluene for an 8 hour time with the following results:

<u>TIME</u>	<u>AMOUNT or CONCENTRATION</u>
1 hour	200 ppm
1/5 hour	500 ppm
1 4/5 hours	300 ppm
4 hours	50 ppm
1 hour	25 ppm

The 8 hour time weighted average can be determined by the following:

$$\text{TWA} = \frac{(200\text{ppm})(1\text{hr}) + (500\text{ppm})(1/5\text{hr}) + (300\text{ppm})(1\ 4/5\text{hrs}) + (50\text{ppm})(4\text{hrs}) + (25\text{ppm})(1\text{hr})}{8\ \text{hours}}$$

$$\text{TWA} = \frac{200\text{ppm} + 100\text{ppm} + 540\text{ppm} + 200\text{ppm} + 25\text{ppm}}{8\ \text{hours}}$$

$$\text{TWA} = \frac{1065\text{ppm}}{8\ \text{hrs}}$$

$$\text{TWA} = 120\text{ppm}$$

NOTE: Although the time-weighted average was not exceeded, the individual working in such an environment would have headaches, dizziness, and perhaps even some incoordination, nausea and vomiting from such exposure.

C. Mixture of more than one chemical:

Let's say that an individual worker is exposed to more than one chemical but all are within the TLV for each chemical. Is this permissible under OSHA? These are the chemicals, the measured values and the TLV's:

<u>CHEMICAL</u>	<u>TLV</u>	<u>MEASURED VALUE</u>
nitrogen dioxide	5 ppm	2 ppm
ozone	0.1 ppm	0.05 ppm
carbon monoxide	35 ppm	50 ppm
phosgene	0.1 ppm	0.01 ppm

The following calculation is performed to determine if a violation exists.

$$E_m = \frac{2\text{ppm}}{5\text{ppm}} + \frac{0.05\text{ppm}}{0.1 \text{ ppm}} + \frac{35\text{ppm}}{50\text{ppm}} + \frac{0.01\text{ppm}}{0.1 \text{ ppm}}$$

$$E_m = \frac{4}{10} + \frac{5}{10} + \frac{7}{10} + \frac{1}{10}$$

$$E_m = \frac{17}{10} = 1.7$$

A violation of the standard is whenever  $E_m$  is more than one(1) so in this case, there is a violation.

"I recall one time, when I was cleaning out a five hundred gallon tank, and I used toluol to clean the interior. Unbeknownst to me, the fumes in the tank were getting to me, although I could smell the odor of the toluol at the time. ...I just passed out completely, just fell asleep on the floor, and later I was taken out and was walked around the block like a dog to clear my head of the fumes I had inhaled."

- Tom Grasso, OCAW Local 8-584 -

# solvents

Solvents are chemicals that dissolve things - grease, oil, plastic resin, paint, lacquer, cellulose, pesticides, office correction fluid. They also dissolve in your body, causing temporary or permanent damage. Solvents are the most widespread industrial chemicals, and the most widespread chemical hazards to workers. Almost everyone is exposed to at least one solvent during the workday.

## Aqueous and Organic Solvents

The safest solvent is water. But water is incapable of dissolving many industrial materials, so other chemicals are usually used. Some of these are aqueous, or water-based. Soap and water is an aqueous solvent. Most solvents, however, are organic chemicals, so-named because chemicals like them - based on carbon - form the structure of living things. All organic solvents are hazardous.

## Fire and Explosion

Most solvents are flammable. Many are also volatile, which means that they evaporate quickly. Some solvents, like those in fast drying paints, are chosen for their volatility. The faster the solvent evaporates, the faster the paint will dry. Flammable chemicals which are also highly volatile rapidly form explosive mixtures in the air.

The flash point of a chemical is the lowest temperature at which enough of it evaporates to form a mixture with air which can then be touched off by a spark or open flame. The lower the flash point, the greater the explosion hazard. When the flash point is below the temperature of the room, open containers are potential bombs.

Flammable solvents with high flash points can still explode if they are sprayed into the air, as in spray-painting, or if they are heated.

Management is usually more concerned about fire than about health. Fire is dramatic. It destroys not only workers, but expensive equipment as well. Nevertheless, many shops are threatened by fire and explosion from flammable solvents.

## Health

All organic solvents can endanger your health. All of them can harm your skin and make you feel drunk and dizzy. Some affect your blood. Others affect your liver, your kidneys, your heart, your eyes - almost every organ in your body. The symptoms of solvent poisoning are not always obvious. Some of the effects



are subtle, like headaches and dizziness. Some symptoms, like liver and kidney problems, can also be caused by other diseases, and are often mis-diagnosed. Some effects, like blood changes, are difficult to spot without medical tests. Many workers never know they are being poisoned by the solvents they work with.

Workers are exposed to solvents in two ways. First, solvent vapors can be breathed in, irritating the respiratory tract (nose, throat, lungs) and passing through the lungs into the bloodstream. Second, solvents can be splashed onto the skin. Sometimes this damages only the skin, but some solvents, like nitrobenzene, can pass right through into the body.

The more volatile a solvent is, the more of it builds up in the air and the more of it you breathe in.

### Acute and Chronic Effects

Solvents have both acute and chronic effects on your body. Acute effects are caused by single or short-term exposures. Chronic effects result from long-term, day-after-day exposures, often to smaller amounts than are needed to produce acute effects. Acute and chronic effects are often very different. Perchloroethylene, in one high single dose, causes dizziness, lack of co-ordination, and eventual unconsciousness. But a smaller exposure, over a longer period, damages the liver. Not enough is known about the chronic effects of solvents. Be suspicious when management claims a solvent is "completely safe." None of them has been researched adequately.

Two parts of your body most often affected by organic solvents are your skin and nervous system.

### The Skin

Organic solvents dissolve the fats and oils in your skin, leading to dryness, cracking, reddening, and blisters. This condition is called dermatitis. Industrial dermatitis is a disease, not just a temporary annoyance. And since it damages your skin's protective surface, dermatitis makes you more vulnerable to infection and to toxic chemicals. All organic solvents can cause dermatitis.

Aqueous solvents can also cause skin problems. "Dishpan hands" is a mild form of dermatitis.

### The Nervous System

Nerve cells are especially vulnerable to solvents in the bloodstream. All organic solvents affect the nervous system. Exposed workers feel drunk, dizzy, sleepy. Co-ordination and balance are affected. The accident rate goes up. High concentrations can cause unconsciousness and death. These effects are mostly centered in the brain. They are called anesthesia, intoxication, central nervous system depression, or narcosis (not to be confused with so-called "narcotic" drugs.) All organic solvents affect your brain, some in high concentrations, some in low.

A few solvents can damage the nerves in your arms and legs, sometimes causing paralysis. This disease affects the peripheral nervous system, and is called peripheral neuropathy. Methyl butyl ketone, n-hexane, and carbon disulfide can all cause peripheral neuropathy.

### Legal Standards

Legal standards for toxic chemicals are set by the Occupational Safety and Health Administration (OSHA), a federal agency. The threshold limit value (TLV) for a chemical is its maximum legal concentration in the air, averaged over eight hours. TLVs are usually expressed in parts of the chemical per million parts of air (ppm). For example, the TLV for methanol is 200 ppm. This means you can legally be exposed to 200 ppm for eight hours, or 400 ppm for four hours, or 800 ppm for two hours, so long as that is all you are exposed to during the work day.

Many TLVs are probably too high. Most of them are based on inadequate research done by management-oriented "professional" groups. Many of them protect you only from acute effects. In addition, some solvents have synergistic effects with other hazards. That is, they are much more dangerous in combination than they are separately. Trichloroethylene, for example, is synergistic with industrial noise. Together they produce far more severe hearing loss than noise does alone.

Despite their drawbacks, TLVs can be useful. Even the bad ones are better than conditions in many plants. Consider TLVs to be minimum acceptable conditions. If possible, fight for something better in your workplace.

# solvent groups

This section, and the table on pages 4 and 5, list some common solvents. Hundreds are in use, and we do not have the space to describe them all. They can, however, be grouped into a few basic categories based on chemical structure. Solvents in the same group tend to have similar properties, although their toxicity (poisonousness) may vary. If you know what group a solvent belongs to, you have a clue to its dangers.

## ALCOHOLS

Alcohols are widely used as solvents. They seem to be safer than other groups when concentrations are below the TLV, but they can irritate the eyes and upper respiratory tract. Like all solvents, they can dry the skin and cause narcosis. If you swallow them, they can damage your liver. Methanol (also called methyl alcohol or wood alcohol) is the most common alcohol solvent. It causes narcosis, vomiting, and irritation of the skin and respiratory tract. Long-term exposure to methanol vapors may damage your liver. Swallowed, it causes blindness and death. Ethanol (ethyl alcohol, grain alcohol) is the alcohol in beer and whiskey. It is the safest alcohol to use. It is mildly irritating in high concentrations. Butyl and propyl alcohols irritate the skin. They are less volatile than other alcohols, so there is less chance of breathing them in. Amyl alcohols (pentyl alcohols, Pentasol) are highly irritating to the eyes and respiratory tract, and cause narcosis and vomiting. Excessive exposure can be fatal.

All of the alcohols are flammable. Many have flash points at or below normal room temperature.

## ALIPHATIC HYDROCARBONS

Aliphatic hydrocarbons are cheap and widely used. They cause dermatitis and narcosis. All of them are dangerous fire hazards. N-pentane, n-hexane, and n-heptane are rarely used by themselves, but mixtures of them are part of most aliphatic solvents. Recent findings show that n-hexane causes peripheral neuropathy. Gasoline is often contaminated with benzene, a very dangerous chemical (see below). Leaded gas can also cause lead poisoning, and it is contaminated with ethylene dibromide, a carcinogen (cancer causing chemical). The danger of

fire is severe. Gasoline should not be used as a solvent or cleaner. Petroleum naphtha, petroleum spirits, Stoddard solvent, and high-flash naphtha are mixtures whose composition varies widely. They may contain large amounts of benzene. Some have higher flash points than others, but they tend to be more irritating. Kerosene seems to be safer, but it can cause dermatitis.

Never wash your hands with kerosene or any industrial solvent. Demand that management supply safe hand cleaners.



## AROMATIC HYDROCARBONS

Aromatic hydrocarbons dissolve many industrial materials, from rubber to plastics to paint. Many evaporate quickly. The same properties that make them attractive to management - strength and volatility - make them hazardous to workers. All of them can cause severe narcosis and dermatitis. Benzene (benzol) is one of the most dangerous workplace chemicals. It can destroy the blood-forming tissues in bone marrow, leading to leukemia and other fatal blood diseases. It damages human genetic material, possibly leading to birth defects. It penetrates the skin. Benzene is too dangerous ever to use. Yet lab workers, paint strippers, and many other people are still exposed to it. Furthermore, benzene is a common contaminant in all the aromatic hydrocarbons and in some other solvents. Toluene (toluol) is more narcotic than benzene, but it does not seem to harm the blood or cause genetic changes. Its fumes impair judgement and reflexes. Xylene (xylol) is also less toxic than benzene, although

# Common Solvents

TLV  
 Skin  
 Brain  
 Peripheral Nervous System  
 Liver  
 Kidneys  
 Blood  
 Irritates Eyes, Nose, Throat  
 Lungs  
 Causes Cancer  
 Other  
 Fire/Explosion Hazard

Solvent	TLV	Skin	Brain	Peripheral Nervous System	Liver	Kidneys	Blood	Irritates Eyes, Nose, Throat	Lungs	Causes Cancer	Other	Fire/Explosion Hazard
<b>ALCOHOLS</b>												
methanol	200 ppm	X	(x)	(x)	(x)			(x)				high
ethanol	1000	(x)	(x)					(x)				high
n-propyl alcohol	200	(x)	(x)					(x)				high
isopropyl	400	(x)	(x)					(x)				high
n-butyl	100	X	(x)					X				high
isobutyl	100	X	(x)					X				high
sec-butyl	150	X	(x)					X				high
tert-butyl	100	X	(x)					X				high
isoamyl	100	X	X					X				high
cyclohexanol	50	(x)	(x)					X				moderate
												moderate

<b>ALIPHATIC HYDROCARBONS</b>												
n-pentane	1000	X	(x)									extreme
n-hexane	500	X	(x)	X								high
n-heptane	500	X	X									high
petroleum naphtha	500	X	(x)								[1]	high
Stoddard solvent	500	X	(x)								[1]	high
gasoline		X	(x)								[2]	high
kerosene		X	(x)									high

<b>AROMATIC HYDROCARBONS</b>												
benzene	10*	X	X	(x)	(x)	(x)	X			X	[3]	high
toluene	200*	X	X				(x)	X				high
xylene	100	X	X				(x)	X			[4]	high
coal-tar naphtha	100	X	X	(x)	(x)	(x)					[5]	moderate
cumene	50 s	X	X	(x)	(x)	(x)		X	(x)			moderate
tetralin		X	X	X	X	X		X	(x)			moderate
decalin		X	X	X	X	X		X	(x)			moderate
nitrobenzene	1 s	X	X	X	X	X	X		(x)			moderate

<b>CHLORINATED HYDROCARBONS</b>												
carbon tetrachloride	10*	X	X	X	X	X	X					none
chloroform	50*	X	X	X	X	X	X			X	[6]	none
methylene chloride	500*	X	X	X	X	X	X				[6]	none
tetrachloroethane	5 s	(x)	(x)	X	X	X	X		(x)		[6]	none
methyl chloroform	350*	(x)	(x)	(x)	(x)	(x)	X				[6]	none
ethylene dichloride	50*	X	X	X	X	X	X				[6]	high
tri...proethylene	100*	X	X	X	X	X	X				[6,7]	high
per...broethylene	100*	X	X	X	X	X	X				[6]	high
chlorobenzene	75	(x)	(x)	X	X	X	X				[6]	high



it may cause slight changes in the blood. It is more irritating than toluene. It causes menstrual problems and chronic exposure may increase the risk of heart attack. Coal-tar naphtha is a mixture of aromatic hydrocarbons. Its exact composition varies. Nitrobenzene is used in some paints and polishes. It poisons the nervous system, causing tremors followed by unconsciousness and death. It can affect the oxygen carrying capacity of the blood. It can be absorbed through the skin. Nitrobenzene should not be used as a solvent.

#### CHLORINATED HYDROCARBONS

Most chlorinated hydrocarbons are not flammable, so they are popular with management. But all of them can be health hazards. They are used as degreasers, in dry-cleaning, and as general solvents. All of them cause narcosis and dermatitis. Some damage the liver. Several are known to cause cancer, and none of them has been researched enough. Some scientists think many chlorinated hydrocarbons may prove to be carcinogenic.

Carbon tetrachloride is highly toxic to the liver and kidneys, even in small concentrations. Lab workers and others are often exposed. Tetrachloroethane is rarer, but it is even more toxic. Neither should ever be used as a solvent. Because of its high TLV and low flammability, methylene chloride (dichloromethane) is sometimes called a "safety solvent," but it irritates the eyes and causes narcosis. The body converts it to carbon monoxide, adding to the carbon monoxide hazard already present in most shops. It is highly volatile and should always be well ventilated. Ethylene dichloride (1,2-dichloroethane) is highly toxic to the blood and to the nervous system. The current legal standard is probably much too high. Unlike most other chlorinated hydrocarbons, it is flammable. Methyl chloroform (1,1,1-trichloroethane) can irritate the skin and cause narcosis in high concentrations, but it seems to be safer than other chlorinated hydrocarbons. It should be carefully distinguished from chloroform, which is much more toxic.

Trichloroethylene is widely used as a degreaser and a cleaner. It is a strong anesthetic, and workers have died while cleaning degreaser tanks. It can cause sudden heart failure several hours after exposure. In high concentrations it may damage the liver. It seems to harm the inner ear. It is synergistic with alcohol,



and workers who drink are more strongly affected. There is recent evidence that it causes cancer. It is usually stabilized with dioxane (see below), another possible carcinogen. Consider trichloroethylene extremely dangerous. Perchloroethylene (tetrachloroethylene), another degreaser and a dry-cleaning agent, seems similar to trichloroethylene, but as yet there is no evidence that it causes cancer.

Many of the chlorinated hydrocarbons can be decomposed, or broken down, into other toxic chemicals by heat and by the ultraviolet light from welding operations. The worst breakdown product is phosgene, a poison gas used in World War I. Welding should never be done near degreaser vats.

#### KETONES

Ketones are used in adhesives, varnishes, dopes, lacquers, and other coatings. They are used to clean glassware and electronic equipment, and in the production of many plastics, cosmetics, and other chemicals. All of them irritate the skin, eyes, nose, and throat. All of them cause narcosis. All of them are flammable. Acetone is one of the most common solvents. It is used in many household products, like nail polish remover. It is one of the least toxic solvents, but it is highly flammable. Methyl ethyl ketone (MEK, 2-butanone) is highly irritating. It may be synergistic with toluene, producing narcosis, nausea, and impaired judgement to a greater extent than either chemical alone. It can penetrate the skin. Methyl isobutyl ketone (MIBK, hexone), ethyl butyl ketone, and methyl amyl ketone have similar effects.

Methyl butyl ketone (MBK, 2-hexanone) is very toxic. It causes severe peripheral neuropathy, sometimes leading to

permanent paralysis. It should never be used.

#### ETHERS

Ethers are used as solvents for dyes, esins, waxes, cellulose acetate, and cellulose nitrate. They can cause dermatitis and severe narcosis.

Ethyl ether is sometimes used as an anesthetic for surgery, and occupational exposure to high concentrations can cause unconsciousness and death. Chronic exposure leads to nose and throat irritation, dizziness, and loss of appetite. Isopropyl ether (diisopropyl ether) is less anesthetic, but more irritating.

Ethers are dangerous fire hazards. They have low flash points. In addition, they can form explosive compounds, called peroxides, with the oxygen in the air. These peroxides can detonate without the presence of a flame.

#### ESTERS

Two classes of esters, formates and acetates, are commonly used as solvents. The formates cause dermatitis, narcosis, and irritation. Little is known about their chronic effects. Acetates are often used in cellulose lacquers. They can also cause dermatitis and narcosis, along with eye irritation and tightness in the chest.

thyl acetate damages the eyes. Amyl acetate can harm the liver and blood. Little is known about other chronic effects.

#### GLYCOLS

Ethylene glycol and diethylene glycol are not very volatile, so high concentrations are not formed in the air unless they are sprayed or heated. But both can be absorbed through the skin. Diethylene glycol can damage your liver and kidneys. Both cause narcosis. They are irritating to the eyes, less so to the skin.

Cellosolve (ethylene glycol monoethyl ether, Dowanol EE) is harmful to red

blood cells and to the nervous system. It can irritate the lungs. Methyl cellosolve (ethylene glycol monomethyl ether) is more toxic to the blood and nervous system, and it poisons the liver and kidneys. Exposure results in headaches, tremors, forgetfulness, and impaired reflexes. These changes occur with both chronic and acute exposure. Both chemicals can be absorbed through the skin.

#### OTHER

All of the following solvents can cause dermatitis and narcosis.

Turpentine is a complex mixture of chemicals distilled from wood. It is irritating, and chronic exposure may damage your kidneys.

Carbon disulfide is used in rayon production and in laboratories. It is one of the deadliest solvents. Acute exposure to high concentrations rapidly affects the brain, resulting in unconsciousness and death. Chronic exposure can also cause brain damage, leading to depression, hallucinations, wild and erratic behavior, and many of the symptoms of severe mental illness. Exposed workers have high rates of suicide. It causes peripheral neuropathy and heart disease. Carbon disulfide has a low flash point and it is so flammable that even an unlagged steam pipe can ignite the vapor. Carbon disulfide should never be used as a solvent.

Pyridine is used as a solvent in the chemical industry. It can cause diarrhea, nausea, stomach pain, general weakness, irritability, and sleeplessness. Acute and chronic exposure can both damage the liver, sometimes without any of the other symptoms. It is readily absorbed through the skin.

Furfural is a solvent for various plastic resins. It is a strong irritant. It can also cause headaches, fatigue, numbness of the tongue, and loss of the sense of taste. The chronic effects are unknown. A similar chemical, tetrahydrofuran, seems to be less toxic, but it is irritating. Tetrahydrofuran forms explosive peroxides in the air.

Dioxane (diethylene-1,4-dioxide) is sometimes added to solvent mixtures, especially trichloroethylene. It is occasionally used by itself to dissolve plastics, natural resins, and cellulose acetate. Acute exposure damages the liver and kidneys. It may cause cancer. It can be absorbed through the skin. Dioxane should never be used.



# what to do

## Knowledge

You should always try to find out what solvents you are exposed to and their hazards. Unfortunately, most solvents are labeled only with their trade names - when they are labeled at all. The situation is complicated by the fact that some solvents are mixtures of several chemicals. Even single-chemical solvents contain impurities. Toluene, for example, often contains benzene, which is much more toxic.

Demand that management supply you with the generic (scientific) names of all the chemicals you are exposed to. Containers should be labeled with the name of solvent, its hazards, and the procedure for safe use. Management should also be required to test each solvent for impurities, and to make the results available to workers. Get these rights written into your contract.

## Substitution

Substituting safer solvents for more dangerous ones can reduce the hazards. Acetone, the alcohols, and some of the aliphatic hydrocarbons are less toxic than other solvents. Methyl chloroform can be used in vapor degreasers in place of trichloroethylene, although with caution since it has not been adequately tested. Aqueous solvents can sometimes replace organic ones. But remember: all solvents have their hazards. Substitution only reduces the risk; it does not eliminate it.

Some chemicals should never be used as solvents. These include benzene, carbon tetrachloride, carbon disulfide, hexane, methyl butyl ketone, tetrachloroethane, nitrobenzene, leaded gasoline, and dioxane. Although it is widely used, trichloroethylene should be added to this list because of the new information that it causes cancer.

## Monitoring

The company should supply equipment which can monitor the level of solvent vapor in the air. The equipment should be available to workers, not just management. The union or worker safety committee should have the right to shut down

operations when the level is too high, and any worker feeling the effects of solvents should have the right to leave the area without loss of pay.

## Ventilation

Local exhaust ventilation should be installed wherever solvents are used. The system should regularly be cleaned and inspected. Fume hoods and enclosed units should be used wherever possible.

General room ventilation is almost useless for controlling solvent vapors.

## Personal Protection

Respirators and rubber gloves should not be used as a regular means of protection from solvents. They are ineffective, uncomfortable, and they can lead to a false sense of security.

Respirators can be used in emergencies, or when you have to enter a closed tank. Never enter a tank unless it has been completely drained and ventilated with fresh air. Another worker should be present as a backup. Both of you should have respirators. Self-contained or externally-supplied breathing devices are better than canister masks which leak and have to be changed frequently. Paper filters are useless against solvent fumes.

Many solvents penetrate rubber gloves. In fact, gloves can make dermatitis worse by holding the solvent against the skin.

## Design of the Work Process

Flammable solvents should not be used around open lights, potential sparks, or other sources of ignition. The company should supply leakproof and spill-resistant containers.

Welding should never be done around solvents, especially the chlorinated hydrocarbons, which can form phosgene gas.

Washing facilities should be provided in the workplace. Emergency showers and eyewashes should be placed wherever the more dangerous solvents are used.

Never wash your hands with organic solvents.

## Medical Testing

All workers exposed to solvents should have regular check-ups, including blood and urine tests, and other tests when appropriate. The company should pay for the check-ups, but they should be done by a doctor of the worker's choosing - not by the company doctor.

*This fact sheet was prepared by the Occupational Health and Safety Project of Urban Planning Aid, 639 Massachusetts Ave., Cambridge, Ma. 02139. (617) 661-9220. Contact us for more information on solvents, other occupational hazards, and tactics for cleaning them up.*

# MONITOR

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## OCCUPATIONAL/ENVIRONMENTAL CANCER

Phillip L. Polakoff, M.D.

Since the beginning of 1974, increasing numbers of news headlines have suggested that industrially-used chemicals are carcinogenic (cancer-causing). Examples are: "Goodrich Firm Probes Three Cancer Deaths" (Louisville Courier Journal, 1-24-74); "Now It's Vinyl-idine Chloride Which May Be Carcinogenic" (Occupational Health and Safety Letter, 10-8-74); "Arsenic Linked to Cancer Rate" (San Francisco Chronicle, 8-30-74); and "Worries Over Drinking Water — Cancer Causing Agents May Be Present" (San Francisco Chronicle, 11-2-74).

Unfortunately, the end of this growing list is not in sight to this day—men, women, and children continue to serve as experimental guinea pigs.

The magnitude of our nation's cancer problem is staggering. As early as 1964, the World Health Organization (WHO) officially stated that environmental agents (such as cigarette smoke) are a major causative factor in 75-85 percent of all cancers. The American Cancer Society estimates that 700,000 new cancer cases and approximately 380,000 cancer-caused deaths occur each year. More specifically, over 1000 substances ordinarily found in American work environments have been proven to be cancer-causing (see Table 1 for most commonly used agents), or are suspect of being carcinogenic (see Table 2). Presently, there exists no data which would indicate the total number of persons exposed to all these numerous cancer-causing agents. However, the National Institute of Occupational Safety and Health estimates: 1.5 million persons risk exposure to arsenic; 200,000 currently, but 3.5 million at one time or another, risk exposure to asbestos; and 100,000 risk exposure to cadmium.

In addition, occupational/environmental related cancer is not solely a 20th century phenomenon. In 1775, the English surgeon Sir Percival Pott described and recorded his observations that a rare form of scrotal cancer occurred only among young boys employed as chimney sweeps. Approximately 100 years later, scrotal cancer was also attributed to exposure to paraffin and shale oils. Within the same time period, skin cancer was attributed to exposure to tar. In the late 1890's, lung cancer was also diagnosed as an occupational disease among miners in Austria. There seems to be no end to continuing disclosures of additional carcinogenic substances in the work environment. More recently, bladder tumors have been attributed to exposure to aromatic dyes — beta and

TABLE I

Agents proved or suspected of being cancer causing for workers on an epidemiological (people) basis:

Agent	Cancer Site
Ultraviolet radiation	Skin cancer
X-rays	Skin cancer Leukemia
Uranium ore	Pulmonary cancer
Arsenic	Skin and (lung cancer)
Asbestos	Lung cancer Pleural mesotheliomas (Abdominal cancer)
Chromium	Lung cancer
Nickel	Lung cancer Nasal and paranasal cancer
Iron ore	Lung cancer
Bis-chloromethyl ether	Lung cancer
Benzene	Leukemia
Isopropyl oil	Paranasal cancer
Soot, tars, mineral oils and cutting oils	Skin cancer
Carbon black	Lung cancer
Mustard gas	Laryngeal cancer
Aromatic amines	Bladder and upper urinary tract cancer
Vinyl chloride	Liver—angiosarcoma

alpha naphthalamine, and benzidine.

### Characteristics of Work-Related Cancers

Occupational/environmental induced cancers share characteristics which are not common to other cancers:

(1) Such cancers usually appear after a lengthy exposure in the related occupation;

(2) There exists a substantial latent period between initiation of cancer (first exposure to toxic agent) and the time the cancerous lesion appears averages between 11 and 20 years. Although the exposure period has been as short as 2 years, the potential range is as long as 40 years.

(3) These cancers generally develop at an earlier

CONTINUED ON PAGE 4

### HAZARDS OF EXPOSURE TO CARBON MONOXIDE

Leo Seidlitz, Ph.D.

It is well known that connecting a hose from the tailpipe of a car to its interior is a relatively painless and simple way to end it all. In fact, the Greeks and Romans used carbon monoxide (CO) both to commit suicide and to execute criminals. What is not as well known are the effects of a less-than-fatal dose of CO or the effects of chronic (continuous) exposure to lower levels of CO.

The potential for occupational exposure of workers to CO is greater than that for **any** other chemical or physical agent. More people succumb to acute CO poisoning than to any other single toxic agent, except for alcohol. If you work in a kraft pulp mill, petroleum refinery, iron foundry, sintering mill, auto repair shop or a warehouse you may be exposed to carbon monoxide. Other exposed occupations include arc welders (particularly when working with a carbon dioxide-shielded arc), traffic controllers, toll collectors, truck and bus drivers, tunnel workers, fork-lift operators, printers, construction equipment operators, cooks, bakers and fire fighters. Salamander heaters at indoor construction sites, furnaces, ovens, stoves, forges, kilns or any equipment or process where incomplete combustion occurs can be a significant source of CO.

#### Hazards of Carbon Monoxide

Carbon monoxide is a tasteless, odorless, colorless gas. Since you can't detect it by the senses, serious damage can take place without warning. CO has about the same weight as air, so it will not accumulate in high or low spaces. Instead, it tends to spread uniformly through the air.

The only significant way the gas can enter the body is by inhalation but it will not directly harm any cell of the human body. It does its dirty work after passing from the lung's air sacs into the blood stream by attaching itself to the hemoglobin found in the red cells of the blood.

Hemoglobin normally performs the task of distributing oxygen from the air sacs to the tissues of the body. When CO is present in the blood, it displaces the oxygen from the hemoglobin so that the red blood cells are not able to carry as much oxygen to the various parts of the body. In fact, CO is bound 200-300 times more tightly to hemoglobin than is oxygen. In addition, the oxygen that does get distributed by the red blood cells is taken up less efficiently by the tissues when CO is present. The harmfulness of these effects is increased by high heat or humidity or by physical exertion because of increased breathing rates. Fortunately, CO does not accumulate indefinitely in the blood, but rather reaches a final amount which depends on the concentration of CO in the air being breathed.

The initial symptoms of acute CO poisoning include headache and a feeling of oppression in the chest, followed by dizziness, nausea, weakness of leg muscles, mental confusion or perhaps drowsiness and finally, loss of consciousness. The victim at first becomes pale and then cherry red. This effect in non-whites can be checked by seeing if their mucous membranes become darker pink. The entire process

is accelerated by physical exertion which, of course, requires more oxygen.

First aid consists of immediate removal to fresh air, including the administration of oxygen which should be available where CO exposure can be significant. Mouth-to-mouth resuscitation and external cardiac massage must be administered if breathing has stopped. Rescuers must be supplied with self-contained breathing apparatus.

Recovery may be complete if the exposure was short enough to prevent damage to vital organs, particularly the brain and heart. On the other hand, recovery may be apparent but pneumonia or damage to the brain, central nervous system, heart, blood vessels, or the kidney may show up days or even many weeks later. The damage to the brain and the central nervous system may be subtle and apparent only upon psychomotor testing or there may be permanent psychosis or paralysis resulting from the exposure.

The chronic, long-term effects of exposure to lower levels of CO are not as well established, but there is an increasing conviction that harmful effects do occur. Symptoms of this kind of exposure can include a sense of pressure in the head or other forms of headache, dizziness, weakness in the legs, fatigue and lack of energy. There may be deterioration of mental sharpness, visual sensitivity, reaction time, hand-eye coordination and other behavioral characteristics. Workers are less able to respond quickly and accurately to the demands of their job and, therefore, accident rates increase. CO accelerates the formation of cholesterol deposits in arteries (arteriosclerosis). By reducing the circulation of oxygen to the brain, heart, blood vessels and kidneys, CO may produce long-term damage to these organs. As stated earlier, CO itself does not accumulate in the body, but it is believed that the damage is due to the slow accumulation of many small effects produced by the lower concentrations of CO.

#### Methods of Protection

In workplaces where considerable amounts of CO are produced, continuous monitoring instruments should be set up. These instruments can be adjusted to give an alarm at a pre-set value. It is advisable that workers periodically check the alarm settings them-

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selves because cases are known in which the settings were maintained at a dangerously high level. Total enclosure of some CO-producing processes might be possible, but if not, then local exhaust and adequate general ventilation must be provided. Workers exposed to CO who complain of fatigue and lack of energy often achieve a sense of well-being and increased energy if adequate ventilation is installed.

Whereas diesel engines do not emit CO, if properly adjusted, gasoline-powered engines of course, can emit abundant amounts of CO, particularly when run at slow speed. It is imperative that the exhaust pipe be directly connected to an exhaust manifold.

If it is necessary to enter a confined space where CO is present or suspected to be present, breathing apparatus with compressed air supply must be worn. Canister masks, even with activated charcoal filters, are generally not adequate. No one should work alone in such spaces.

Workers having difficulty with their heart, blood vessels, or kidneys should not further strain these organs by exposure to significant amounts of CO. Likewise those suffering from anemia or respiratory diseases should avoid such exposure. Pregnant women are also at greater risk from exposure to CO.

Rotation of duties is a method of control of exposure to CO where the level is inherently high. For example, in New York City's Holland Tunnel, a vehicular tunnel, police are assigned to two hours duty in the Tunnel alternated with two hours of non-exposed duty. Intensive medical examinations of these people, even after eleven years of tunnel duty, have shown no effects due to CO.

OSHA requires that exposure to CO be no more than 50 parts per million (ppm) averaged over an eight-hour day. In 1972 the National Institute of Occupational Safety and Health (NIOSH) recommended that this level be lowered to 35 ppm with a ceiling of 200 ppm at any one time period. NIOSH states that the present limit of 50 ppm does not adequately protect workers having the conditions referred to above nor does it prevent the undesirable behavioral effects of CO. Even NIOSH admits that its reduced standard may not provide a margin of safety for workers with symptoms of heart or blood vessel disease. As a matter of fact, healthy workers engaged in heavy labor are not adequately protected by the new proposed standard. It is believed that the limit for such workers should be  $\frac{1}{3}$  to  $\frac{1}{2}$  of that for workers doing light activity.

As of yet, OSHA has not acted upon this or other NIOSH recommendations, even though it is obligated to do so by law. A single copy of the NIOSH recommendation, "Occupational Exposure to Carbon Monoxide" can be obtained free of charge by writing to: Office of Technical Publications, NIOSH, Post Office Building, Cincinnati, Ohio 45202.

It would be a serious omission to end this article without commenting on the relation of cigarette smoking and CO exposure. The serious effects of cigarette smoking are sometimes used as a cover-up or a convenient scapegoat in order to minimize the importance of occupationally related diseases. In the case of CO, there is no question that the harm done by industrial exposure can be made even more serious for smokers. Just one fact can substantiate this conclusion — the "air" inhaled while smoking contains about 700-800 ppm of CO, more than ten times the OSHA standard!

## Occupational Alcoholism: A New Approach

*The following article is taken from the December 16, 1974 special edition of the SAN MATEO COUNTY LABOR newspaper. The edition contains an excellent assortment of articles dealing with the emerging concept of Occupational Alcoholism. The MONITOR highly recommends that this special edition be read by all persons interested in obtaining background information on this most critical issue. To obtain copies, please contact: Harold Rossman, Managing Editor, 300 Eighth Avenue, San Mateo, CA 94401, or phone (415) 343-1412.*

Why is a joint labor-management approach to the treatment of occupational alcoholism the best way to go?

For an answer from the labor side of that combination, we quote the following remarks to a Chamber of Commerce group by Frank Winn, special assistant to the president of the United Automobile Workers:

"I am convinced that the growing interest in a cooperative labor-management approach is the most significant development in the treatment of alcoholics since the establishment of Alcoholics Anonymous some 30 years ago and the subsequent pronouncement by the American Medical Association that alcoholism is, rather than a weakness of character, an illness and a treatable illness.

"I think the labor-management approach is important for a number of reasons. Obviously, the first reason is that it offers an opportunity for the recovery and rehabilitation of alcoholics in far greater numbers than any of the heretofore rather piecemeal and haphazard approaches, and at an earlier stage in the progress of the disease than might otherwise be the case.

"A second reason is that I believe the successful and widespread operation of such a labor-management program will create enough demand and pressure on the medical profession, hospital administrations, public health departments and other appropriate government agencies that we can begin to overcome the existing deficits in treatment facilities, in the employment of professional personnel trained in alcoholic treatment and rehabilitation and what I and many others have reluctantly had to conclude is, at best, an indifference and, at worst, outright resistance on the part of most of the medical profession and hospital administrations to dealing with and treating alcoholism as an illness.

"... Now when we talk about a cooperative labor-management approach, the question naturally arises: Why a joint labor-management approach?

"I think a very general, and yet simple, answer to this question is that if management in an organized plant or office unilaterally established an alcoholism rehabilitation program, its implementation would be subject to the regular grievance procedure provided for in the collective bargaining agreement. And the usual grievance procedure which is, like our government courts, an adversary procedure, does not in my opinion lend itself adequately and appropriately to determining whether a person is suffering from the disease of alcoholism and, if he is, what can be done to help him recover from this illness.

"Under the kind of plan I believe would work, if there is a deterioration in the quality of an employee's work, in the quantity of his output, in his attendance and concentration on his job, and there is reason to

CONTINUED ON PAGE 6

## PROJECT ACTIVITIES



**COMMITTEE AND STAFF:** Huddling during the recent seminar on occupational health and safety at the Villa Hotel in San Mateo are seen (from the left) Bruce Poyer, staff member of the Center for Labor Research & Education; Bob Aaron, Fire Fighters 2349; Dr. Leo Seidlitz; Ed Basye, Steelworkers 1069; Jackie Darracott, Office & Professional 3; Bob Fowler and Morris E. Davis. Dr. Seidlitz is coordinator of research for the Occupational Health Program; and Fowler and Davis are coordinators. The others are members of the Labor Council committee.

- On December 5, 1974, the Labor Occupational Health Project co-sponsored a workshop and seminar with the San Mateo County Central Labor Council. The day long session was held at the Villa Hotel and 45 registrants were in attendance.

The workshop and seminar covered a variety of topics ranging from an overview of health and safety legislation to organizing local health and safety committees. One main result of the meeting was that arrangements are now being discussed for a follow-up program aimed specifically at rank and file unionists interested in health and safety. Although no date has been set, the meeting will be held in the auditorium of Steelworkers Local 1069 in South San Francisco.

Ed Basye of the Steelworkers Local 1069 and Chairman of the Council's Occupational Health and Safety Committee, opened the sessions and welcomed the participants. Program participants included LOHP staff associates Bob Fowler, Bruce Poyer, Phillip L. Polakoff, M.D., Morris Davis, and Leo Seidlitz, Ph.D.

The program proved to be quite successful and future meetings hold the promise of establishing a fruitful relationship between the LOHP and unionists associated with the San Mateo Central Labor Council.

- The Labor Studies Program of the City College of San Francisco will offer a course entitled Health and Safety in the Workplace. The course will begin on February 11, 1975 and meets weekly on Tuesday nights from 7-9 p.m. Leo Seidlitz, Ph.D., Science and Research Coordinator of the LOHP, will conduct the course.

**Description:** Designed to provide the tools for recognizing, understanding and controlling the hazards of work. Discussion topics include principles of industrial hygiene and safety; utilization of union and collective bargaining activity; and medical testing or screening approaches that are feasible at the work-

place level. The course will also cover the analysis of the background, content and practical impact of both federal and state OSHA legislation and a survey of resources and agencies available for assistance in the recognition and control of workplace hazards. For further information, contact: Labor Studies Program, San Francisco Community College, 33 Gough St., San Francisco, CA 94103; or call (415) 864-3200.

### OCCUPATIONAL CANCER CONTINUED FROM PAGE 1

age than non-occupational related cancers. The cancer's development is largely dependent upon both the age at which exposure occurs and the latent period necessary for tumors to develop.

(4) Pre-cancerous abnormalities, i.e. growths, enzyme disturbances, etc. almost invariably precedes the cancer. These abnormalities are often characteristic of particular occupations.

(5) Localization of the tumor is remarkably constant in any one occupation. For instance, farmers, foresters, and fishermen have higher rates of lip and skin cancer. Woodworkers and painters exhibit higher incidences of nose and nasal cavity cancers. Likewise, white-collar workers and professionals have higher rates of cancer in the large intestine.

(6) Occupational tumors, unlike other forms of cancer, are frequently multiple.



*Construction workers—extremely hazardous type of work.*



*Skin cancer—in part caused by overexposure to sunlight which is common amongst construction and agricultural workers.*

## Methods of Prevention

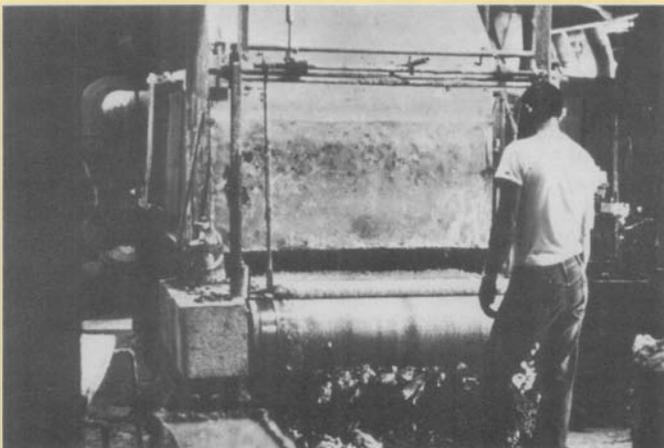
Having discussed the magnitude and seriousness of the problem, the question remains as to the adequate means of resolving this crisis. Dr. Cesare Maltoni, a noted cancer researcher from Italy, has suggested an essential and realistic preventative approach:

(1) Correct the presently inadequate methods used

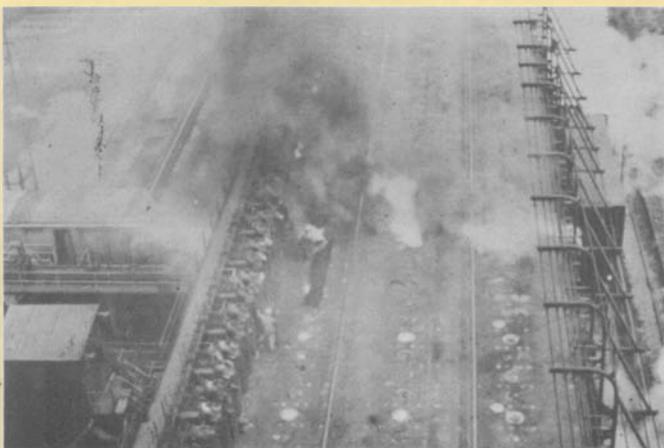
Beryllium	Pesticides (DDT, aldrin, dieldrin, haptachlor, chlordane)
Cadmium	
Cobalt	
Lead	Thiourea and related compounds
Selenium	Tannins
Zinc	Detergents
Carbon tetrachloride	Alkylating agents
Chloroform	Nitrosamines
Estrogens	Azo-dyes

for experimental testing of substances. To this end, Congress must pass the Toxic Substance Control Act of 1972, which would require the testing of all new agents **before** they are marketed.

(2) Compile up-to-date epidemiological data from



*Asbestos worker — 50% chance of getting lung disease after 20 years.*



*Coke ovens — much higher rates of lung and skin cancer associated with this type of work.*

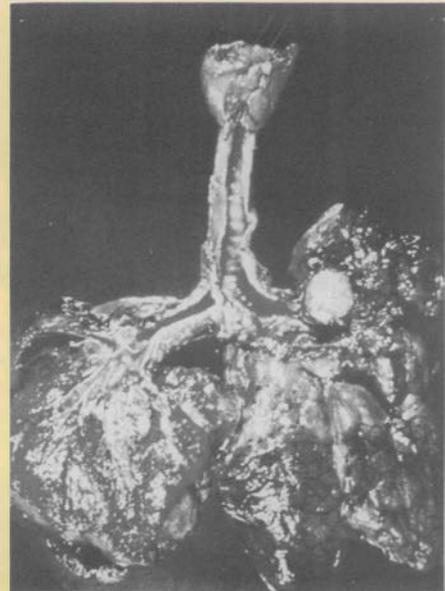
various categories of workers exposed to risk.

(3) Enactment of legislation which would prohibit the production and use of agents shown (experimentally or epidemiologically) to be strongly cancer-causing.

(4) Provide technical protection measures where weak or doubtful carcinogens continue in use of production.

(5) Perform specific medical checks for the early detection of precancerous growths, as well as to determine occupational risk potential.

If the above preventative measures are to become a reality, our nation must drastically alter its priorities. A substantial percentage of new cancers can be prevented. Currently the so-called War on Cancer has an annual budget of \$663 million with only \$1.2 million budgeted for occupational/environmental cancer research. This type of neglect can no longer be tolerated.



*Mesothelioma—very rare form of lung cancer but is quite common amongst asbestos workers.*



*Bronchogenic carcinoma—*asbestos, chemical and mining workers all have higher risk of getting it.**

## CAL/OSHA DEVELOPMENTS

### Feds Criticize Cal/OSHA

Federal officials have recently completed a review of the Cal/OSHA program and have made several findings relative to the effectiveness of the State Division of Industrial Safety's implementation of the Cal/OSHA program.

The California Occupational Safety and Health Plan was submitted to the U.S. Department of Labor on September 25, 1972 and was approved by the DOL on April 24, 1973. The federal review of Cal/OSHA covers the first six months of operations — from January through June of 1974.

The federal report generally acknowledged that certain developmental steps had been accomplished since the Plan had been approved. It also recognized the fact that there was a significant number of qualified personnel to assure proper enforcement of standards. In addition, the report commended the State for the amount of time it had devoted to initial in-service training of Safety Engineers and clerical support staff.

The more critical aspects of the report seems to further amplify many of the complaints which employees have been voicing since the inception of the California Plan. The following is a partial summary of the findings:

— Of the 716 case files reviewed, 155 (22%) do not indicate whether employees or employee representatives participated in the walkaround and/or were interviewed. Of the 208 complaint files reviewed by one of the OSHA Area Offices (31 of which were anonymous), 28% had no evidence that the complainant had been informed of action or non-action taken. **Recommendation:** *Have field personnel reminded of obligations under AB150 (California Occupational Safety and Health Act of 1973), regarding employee participation in inspections, and of the need for documentation of this participation in the case files. The complainant should receive an original copy of the reply since he instigated the inspection.*

— Uniform instructions for Safety Engineers and Industrial Hygienists regarding contents and conduct of opening and closing conferences do not appear to exist in a written, statewide basis. Of the 716 case files reviewed, 71 (10%) do not indicate whether an opening conference was held; 32 (5%) do not indicate whether a closing conference was held. **Recommendation:** *Develop a Policy and Procedure Directive regarding contents and conduct of opening and closing conferences, including references concerning the necessity of holding these conferences and documenting them in case files.*

— With regard to the State Department of Health, the administrative personnel estimated that referrals for assistance from DIS make up over 90% of the workload of the currently staffed Industrial Hygienists (IH). However, the evaluation revealed that only 205 inspections, which represented 3% of total inspections during the 3rd and 4th quarters of fiscal year 1974, had been conducted in health. An inconsistency appeared between workload estimates and the number of health assisted inspections. **Recommendations:** *Assign at least two industrial hygienists to each DIS regional office; and preferably, locate an industrial hygienist at each DIS district office. Also, examine current industrial*

*hygiene manpower utilization and productivity.*

— Review of case files with IH participation indicates that the Health Department does not receive copies of the citations issued by DIS as a result of IH surveys. The Occupational Health Section is therefore unaware of whether a citation is issued, the violation is accurately cited, or whether abatement of the violation occurs. Employers' plans for interim and final corrective measures are not received by the IH to determine effectiveness. **Recommendation:** *Carry out a joint investigation by the safety engineer and the industrial hygienist in cases where the complaint involves a health matter. When the results of the industrial hygiene survey are completed, have the industrial hygienist present a closing conference with the employer to explain fully the violation (if any), interim control measures, and to determine if the abatement period is reasonable. Send copies of citations and correspondence involving health of Occupational Health Section.*

— In the Industrial Hygiene Report, when a standard is violated, it is the responsibility of the industrial hygienist to determine the seriousness of the violation. It appears that this judgment is very arbitrary and without uniformity between field industrial hygienists. The safety engineer may or may not concur with the industrial hygienist recommendation of severity of the hazard. In some of the citations the violation was reworded by the safety engineer and lost some of the meaning that the industrial hygiene report attempted to convey. **Recommendation:** *Develop a standardized method for rating the severity of a health violation.*

— Thirty-six Safety Engineers attended 24 hours of NIOSH training on the recognition of environmental hazards. According to interviews with DIS officials, only about 3% of the field investigations result in a referral to the State Department of Health for Industrial Hygiene services. This indicates a need for the training of the field engineers in the recognition of health problems during their routine inspections. **Recommendations:** *Establish liaison between DIS and the Occupational Health Section to determine specific needs and programs for cross-training of industrial hygiene and safety personnel.*

— In the first six months of operation, there had been virtually no evidence of involvement from the Office of the State Fire Marshall in providing technical assistance to DIS. Although \$300,000 was allotted in fiscal year 1974, only \$4,000 had been spent through March, 1974. **Recommendation:** *DIS should develop communications and utilize the Office of the State Fire Marshall as described in the State plan, agreement and grant. Explicit procedures should also be developed so that DIS district managers can utilize the State Fire Marshall in identification of fire hazards.*

### ALCOHOLISM CONTINUED FROM PAGE 3

believe that the cause is alcoholism, then the question of whether he is suffering from alcoholism should be decided by an examination and diagnosis of a doctor whose professional competence and the acceptance of whose judgment has been agreed upon by labor and management in advance.

If the diagnosis is alcoholism, then union and management would work together for the primary and over-riding purpose of restoring a distressed human being to a useful and productive life. In this manner, union and management become cooperating partners in an endeavor that is of great credit to them both.

## Operating Room Personnel Face Health Dangers

Anesthetic gases found in hospital operating rooms are strongly suspected of causing a variety of health risks in men and women who work in surgery regularly, a study released here shows.

The study, sponsored by the National Institute of Occupational Safety and Health (NIOSH), surveyed nearly 50,000 men and women who work as anesthesiologists, nurse anesthetists, operating room nurses and operating room technicians.

Among the results were found:

— Cancer rates among women that are far higher than normal.

— More liver and kidney disease among both men and women.

— More spontaneous abortions and birth defects among children of women who work in operating rooms.

— A 25 percent increase in birth defects among babies fathered by anesthetists, apparently indicating sperm or gene damage.

The increased health hazards were found by comparing health data from these employees with those who work in other areas of the hospital.

Dr. Ellis N. Cohen, who reported on the survey to the meeting of the American Society of Anesthesiologists, said it was not proven that anesthetic gases were the cause of these health hazards. But he cited the fact that operating room personnel run a higher risk in contacting these diseases than other hospital personnel, and also that animal experiments showed the gases have ill effects on health and pregnancy.

Dr. Cohen, of Stanford University School of Medicine, said 20 percent of the 25,000 operating rooms in U.S. hospitals already have equipment to capture and remove waste anesthetic gases. For many hospitals it would cost only about \$100 per operating room to install the equipment, he added.

Under arrangement with NIOSH, Stanford University is now studying control procedures to prevent over-exposure to the gases, and they are expected to be ready by Jan. 1, 1975. But hospitals, with assistance from NIOSH, can immediately take steps of their own.

NIOSH is now preparing recommendations on exposure levels (parts per million) of the gases, and will present them to the U.S. Labor Department for promulgation and enforcement through its Occupational Safety and Health Administration (OSHA). This will take some time, and NIOSH emphasized that hospitals can initiate action with the advice and assistance of NIOSH.—Service Employee, Nov./1974

## HEALTH AND SAFETY SHOPTALK

### The Dangers of Clerical Work

Janet Ross, Clerical Worker

For many years, office work was considered an easy, privileged, safe type of work — no dangerous chemicals (supposedly), or machines, relatively low noise level, "desk jobs." However, office work is neither safe nor healthy for the thousands, primarily women, who work in them.

The office where I work is a prime example. Conditions are terrible. It is located in the basement of a small hospital, well isolated from the main building. Eight billers, seven women and one man, and a woman supervisor sit crammed in a space so small that we must walk sideways to fit between the desks. Even then, it is hard to avoid bumping into typewriter trays. All of us have black and blue marks on our legs.

#### Headaches

By midday, so much oxygen has been used up that people lose concentration and become tired and irritable. On several occasions, women have felt nauseous and faint. Cords from typewriters and adding machines lie all over the floor; at least one person trips over them each day. With the machines going, phones ringing, people talking and the boss yelling, the noise is unbearable. By noon one day, four out of 8 billers had headaches. We are always popping aspirins. Many of us suffer from nervous tension.

Another problem is the heat. The room is so poorly constructed that the women sitting by the window freeze, while those sitting at desks less than two feet away are too warm. On cold days, the office is really damp. The heater is a blower suspended from the ceiling which blows hot, dry air on everyone in its path. We are all very afraid of fire, too, since hundreds of files are not in metal cabinets but on open bookshelves along the front of the room. With only one door, people say that we will have to jump out the window in case of fire!

#### Employees Complain

All this may be hard to visualize, but it is a terrible place to be stuck for 40 hours a week. Because of the crowding, a woman gashed her leg on her desk drawer last week. She didn't have enough room to move away from the desk to open the drawer!

Everyone who works there has complained for months; we have repeatedly asked for a bigger, safer workplace. Management has never listened. People become so tired of pointing out the problems, suffer-

CONTINUED ON PAGE 8

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## Labor Dept. Issues New Rules For Federal Employee Safety and Health

New regulations for federal employee job safety and health became effective Nov. 1, 1974. Secretary of Labor Peter J. Brennan announced that the new rules will implement Executive Order 11807, signed September 28, 1974, by President Ford. The new rules appeared in the Federal Register on October 9, 1974.

The rules apply only to federal workers, including the military. They do not cover employees of private contractors working under federal contract regardless of whether the work is performed on government-owned property. Brennan said the rules require that all federal departments and agencies maintain logs of occupational injuries, illnesses and deaths. Serious accidents resulting in fatalities, hospitalization of five or more workers, or property damage of \$100,000 or more must be reported to OSHA within two working days.

Other requirements of the new rules include the following:

— Each agency head must appoint an official of the rank of assistant secretary or equivalent to head the agency job safety and health program.

— Workplace inspections should be conducted by "personnel with sufficient technical competence to recognize unsafe or unhealthful working conditions."

— Employees may report unsafe or unhealthful conditions or may request an inspection of the workplace.

— Imminent danger provisions in the rules call for immediate abatement of the danger or withdrawal of affected workers from exposure to the hazard.

— To assure unsafe conditions are corrected, re-inspections, where practicable, will be conducted.

— Job safety and health standards for federal agencies must provide protection for federal employees "at least as effective as" that offered by OSHA standards for the private sector.

— Field federal safety and health councils will be

continued to facilitate the exchange of ideas and information throughout the government on matters of job safety and health.

### HEALTH & SAFETY CONTINUED FROM PAGE 7

ing under the conditions, and getting nowhere that someone filed a formal complaint with the California Occupational Safety and Health Administration.

### OSHA Inspection

The OSHA man came and inspected the office. The Director of Personnel introduced him by saying "Now girls, this man wants to look over your office, so smile and look pretty!"

He found nothing wrong with the crowding, noise, heating or ventilation. Our boss told us that since the office met OSHA standards we must stop complaining. We told her that the inspector should work in that dungeon for a week and **then** make a decision. One worker remarked, "If this place doesn't violate OSHA standards, I'd like to see an office that does! Cal/OSHA standards must be really low."

Even though the supervisor works in the same room under the same bad conditions, she has no sympathy for the workers' feelings. Management refuses to listen and the hospital "Safety and Health Committee" ignores us. No one from our department is on that committee. In many hospitals, including ours, the clericals are not in the union, so we can't complain to the union and get it to put some pressure on management.

### Talking Union

With office conditions as only one of many problems, we have started to talk about unionizing. It is in the discussion stages, but there is a very strong feeling that organizing into a union will help. We know that the one way we are going to improve things and save our health and sanity is by uniting with each other as workers.—Union WAGE, Nov.-Dec./1974

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# MONITOR

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## ESTABLISHING FUNDS FOR LOCAL UNION HEALTH AND SAFETY COMMITTEES

By BOB FOWLER

Many local unions have expressed an interest in developing an active and progressive health and safety committee. To date, their main constraint has been funding. All too many times they have been faced with going to the membership and asking for money to attend educational programs, purchase materials, equipment, or to sponsor medical screening programs. It is true that local union health and safety committees can expand into broad areas of activity. Most activities they desire to enter into are either precedent setting or not completely understood by the membership. The result could be a negative vote by the membership on the committee's funding request.

Some local unions have eliminated the need to constantly confront the membership with funding requests by submitting an annual budget to the executive board for approval and then on to the membership for final approval. The committee is then funded at a predetermined level for the fiscal year. The budget is usually broken down as to

Comparative Fund Raising: Per Capita vs Cents Per Hour*		
Cents Per Hour	Monthly Income	Annual Income
1¢ per hr. per member . . . . .	\$1733.00	\$20,796.00
2¢ per hr. per member . . . . .	\$3466.00	\$41,592.00
<i>Per Capita</i>		
25¢ dues increase/per member . . . . .	\$250.00	\$3,000.00
50¢ dues increase/per member . . . . .	\$500.00	\$6,000.00

\*—figures based on 1000 membership

anticipated expenditures for each separate cost item. That is, travel, office expenses, education, per-diem, materials, test equipment, consultation fees, medical surveillance, etc. Also, establishment of a special per-capita tax which is deposited in a separate account and mandated by local by-laws to be used specifically for funding the local's health and safety program, is another strategy.

Another approach is to negotiate with the employer for cents per hour per member to be deposited into a special account for the purpose of financing the local union health and

safety committee. This approach has been the most successful in the form of raising adequate funds because it is less taxing on the membership, and no dues increase is required. For example, a small amount of 1¢ per hour results in \$1.73 per member per month into the fund. This means a local with 100 members would have a continuing income of \$173.30 per month to operate their health and safety committee while a local with 1000 members would have \$1,733.00 per month.

The United Rubber Workers utilized this method in 1971. The union signed

*Continued on next page*

### Criminal Charges in Death Of Three Workers

Five officials of the United States Borax and Chemical Corporation face jail and fines for their alleged failure to prevent two accidents that killed three men.

Kern County District Attorney Albert M. Leddy also filed charges against the company. If the officials are convicted, they could be jailed for six months and fined \$10,000 for each violation of the State Labor Code.

Both accidents occurred at the corporation's plant at Boron, California.

In one accident, an employee was killed when he was allowed to work with electrically charged machinery.

In the other, two employees were killed when, without safety equipment, they were sent to work in an area containing poison gas. —*Contra Costa Labor News*



## SAFETY COMMITTEES (Cont'd)

a five-year contract for ½ cent per hour per member to fund a Joint Occupational Health Program. The purpose of the program is to study the occupational health problems of rubber workers with the research being provided by two public health schools (Harvard and University of North

Carolina). The contract covers nearly 82,000 workers in 69 URW locals.

Using this latter method, during each new contract negotiations period, the local would have the option of negotiating additional cents per hour for this fund or fractions of a cent as appropriate. The membership would still maintain control over the fund expenditures

in the form of approving an annual budget and approval of their health and safety committee members. This control could be guaranteed through appropriate local union by-laws. As such activity by local unions increases, it is safe to predict the workplaces under union contract will become the most safe and healthful in existence.

## LOHP LAUNCHES APPRENTICESHIP PROJECT



LOHP has been awarded a one-year performance contract by the U.S. Dept. of Labor for apprenticeship training in health and safety. The long-range goal of the project is to eventually conduct training sessions for all apprenticeable trades in the state.

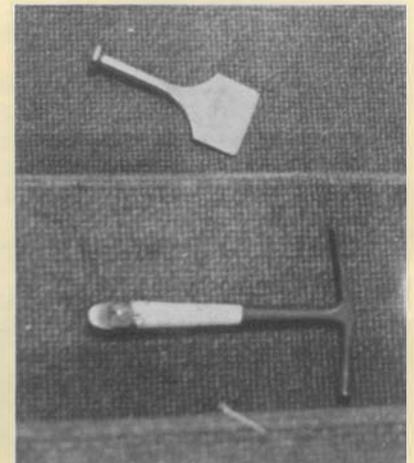
The idea of health and safety training for apprentices was devised by LOHP staff member Bob Fowler. He coordinated a pilot program for auto apprentices earlier this year (See Monitor, Vol. 2, No. 2), which pointed out the need and desire for health and safety training in apprentice's programs.

Under the one-year OSHA contract apprentices from two trades (one in building trades, one in metal trades), and instructors from the building trades group, will receive training in health and safety. Classroom instruction, on-the-job training, and a variety of visual aids will be used in the program.

Carpet, Linoleum and Soft Tile Setters will be the first group of apprentices trained. In addition to safety hazards which this group faces on the job, they are also exposed to a number of potentially toxic materials, such as adhesives, solvents and asbestos.

At the end of the training, apprentices should be able to recognize chemical and physical hazards as well as understand their effects on the human body. They should also become familiar with methods to control hazards and with how to resolve health and safety problems through collective bargaining.

The accompanying pictures show apprentice and journeymen Floor Coverers and some of the tools and materials they use on the job.



## DOCTOR'S CORNER

Donald Whorton, M.D.

Dear Doc:

I work as an automobile mechanic in a large garage and have noticed frequent headaches in the afternoons, especially during cold weather. What do you think might be the problem?



Headaches are a common complaint that many people have regardless of their workplace. The reason for such headaches is difficult to determine; however, it is a common complaint associated with mild fatigue or tension. This is especially true if it occurs at the end of the workday. High blood pressure (hypertension) can also produce headaches and is often the first symptom that a person may have from the hypertension.

One important cause that is often overlooked is the effect of carbon monoxide. Although carbon monoxide poisoning is often associated with suicide or fire-related deaths, most instances of such exposures do not cause fatalities. Headaches may be the only noticeable effect. Automobile mechanics who work in enclosed spaces with motors running are undoubtedly exposed to carbon monoxide produced in the exhaust fumes. The only exception would be if your garage had a system in which the exhaust fumes were vented to the outside via some type of hose arrangement. The fact that you have worse or more frequent headaches during cold weather may be due to the practice of keeping doors and windows closed during cold weather to keep the warm air inside (which incidentally also keeps the carbon monoxide inside).

Headaches are a common complaint

after exposure to low levels of carbon monoxide. It is likely that the headaches you describe are due to exposure to a relatively low dose during the course of the work day. It is also possible that you may become dizzy or feel light-headed if you worked hard or tried to run.

Carbon monoxide is a colorless, odorless, and tasteless gas that is produced from any type of incomplete combustion, such as occurs in automobile motors. Carbon monoxide combines with the oxygen-carrying compound of the blood in a way that reduces the blood's ability to carry oxygen. It can also kill a person if 50% of the blood is combined with the gas.

Space does not allow further discussion about all of the effects of carbon monoxide. (See *Monitor*, January 1975, for further information). But remember that a simple blood test taken at the end of the workday can determine

whether or not you are breathing too much carbon monoxide. Although not every laboratory can perform such a test, your doctor can easily have it sent to a laboratory which will be able to do it.

Requests for information on your work problems should be addressed to: Dr. Donald Whorton, LOHP Program, 2521 Channing Way, Berkeley, CA 94720.

## CLEARINGHOUSE

The staff of the LOHP will conduct a 2½-day educational conference for local union health and safety committee persons on Jan. 18-20, 1976. The conference format will include 6 two-hour workshops in addition to 3 two-hour general sessions with guest panelists from labor and government. The conference will be held at the Asilomar conference grounds in Pacific Grove, California. Registration fees are \$60.00 per person which includes rooms, meals and conference materials. Attendance will be limited to the first 180 prepaid registrants with a registration deadline of 12-15-75. Participants must be authorized health and safety committee persons from local unions. All attendees will receive a certificate of completion. For further information, contact: Bob Fowler, LOHP, 2521 Channing Way, Berkeley, CA 94720. Phone: (415) 642-5507.

On October 1, 1975 a new publication was released by Ralph Nader's Health Research Group in Washington, D.C. The publication's title is: *Winning at the Occupational Health and Safety Review Commission—Workers' Handbook on Enforcing Safety and Health Standards*. The supervising author of the handbook was Mr. Bert Cottine, one of the foremost workers' rights attorneys in the U.S. LOHP recommends this publication be a part of all local union libraries. Your local may purchase a copy by sending \$5.00 to:

Health Research Group  
2000 P St., N.W.  
Washington, D.C. 20036  
Phone: (202) 872-0320

## HEALTH HAZARD ALERT

### Chromate Pigments/Ethylene Dibromide Show Cancer Link

The National Institute for Occupational Safety and Health (NIOSH) has issued an alert on the possible cancer causing effects of chromate pigments and ethylene dibromide. The Dry Color Manufacturers' Association recently informed NIOSH of European studies suggesting that excessive exposure to dusts of lead chromate pigments, lead-molybdenum chromate pigments, and zinc chromate pigments may cause lung cancer.

The warning on ethylene dibromide stems from a National Cancer Institute announcement that preliminary test results show the substance is a potent carcinogen in laboratory animals. It appears to be related to stomach cancer.

—Job Safety and Health

Published monthly by the Labor Occupational Health Program, Institute of Industrial Relations, University of California, 2521 Channing Way, Berkeley, California 94720. (415) 642-5507

### STAFF ASSOCIATES

Morris Davis, *Editor*

Janet Bertinuson      Bob Fowler  
Gene Darling      Andrea Hricko  
Donald Whorton, *Director*

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The opinions expressed in the MONITOR represent the views of the Authors, and not necessarily those of the Institute of Industrial Relations.

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## WORKERS AND HEALTH SPECIALISTS TOUR U.S.S.R.

The Soviet Union is well-known for having progressive occupational health standards for toxic chemicals. A group of 23 workers, union staff, industrial hygienists, and health specialists recently visited the U.S.S.R. to obtain first-hand information on Soviet methods for recognizing and controlling job health hazards. Three LOHP staff members—Morris Davis, Bob Fowler, and Andrea Hricko—went on the two-week tour, which was arranged through the cooperation of the All Union Council of Trade Unions (AUCCTU) in Moscow.

During the whirlwind visit, the group visited Moscow, Leningrad, Baku (which is a large oil refining center on the Caspian Sea), and Yerevan, the capital of the Armenian Republic. In each city medical institutes, clinics or factories were prime points of interest. The Soviet Union is booming with new, high-rise construction and some tour members also visited some of these sites. In addition, meetings were held with the Labor

Protection Department of the AUCCTU and with the staff members from trade unions that represent metallurgical, educational, and textile workers.

Also visited was one of the six Labor Protection Institutes, whose research is funded by the Soviet trade unions. These were of special interest since nothing like them exists in the U.S. Each institute deals with hazards of a different industry. The one in Leningrad has 10 laboratories and a staff of 300 to study hazards in the radioelectronics and energy industries.

Future *Monitor* issues will contain analyses of tour members' observations about actual practices in Soviet factories and on construction sites. They will also compare U.S. and Soviet law and policies aimed at the prevention of occupational diseases. An effort will also be made to have tour members recollect what they observed at the Armenian cognac factory, where generous samples were offered for testing!

Institute of Industrial Relations,  
University of California  
Center for Labor Research and Education

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# MONITOR

VOL. 3 NO. 1 • JANUARY 1976

## WORKER'S RIGHTS UNDER THE ASBESTOS STANDARD

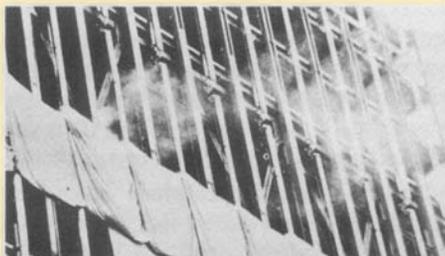
by ANDREA HRICKO

The hazards of asbestos have received much publicity in the past few years, but many workers still do not understand the risks of exposure to the deadly fiber. Few workers have exercised their rights under the OSHA asbestos standard.

The asbestos standard (5 fibers of asbestos per cubic centimeter of air) went into effect in July 1972. When the standard was issued, the AFL-CIO's Industrial Union Department sued the Labor Department, contending that the standard was too weak and would not protect workers. The original standard is slated to be lowered to an average of 2 fibers over an 8 hour day in July 1976. Recently, the Department of Labor proposed that the standard be further lowered to 1/2 fiber per cubic centimeter. (Next month's *Monitor* will compare the differences in the current standard and the new proposal.)

Asbestos has become increasingly popular and important in industry. Its unique properties (heatproof, fireproof, and acid-resistant) make it very valuable in the construction, automotive, and textile industries. Today almost 3,000 products containing asbestos are manufactured.

Over 50,000 workers in the U.S. manufacture asbestos-containing products; another 40,000 workers in the building trades regularly handle asbestos insulation. Millions of shipyard workers and automobile mechanics are exposed to the fiber. No one knows the exact number of workers in California asbestos-using facilities.



Asbestos spray fireproofing escapes from construction site

### Handling Asbestos

Asbestos may look innocent enough. It can be lethal. Inhaling any amount of asbestos dust is unsafe and may cause disease. To minimize dust levels, engineering controls such as isolation, enclosures, exhaust ventilation, dust collection and work practices such as wet-mopping should be used. The OSHA standard specifies both technological and administrative provisions to control the dust. Workers exposed to asbestos should wear disposable clothes to protect the people doing their laundry. Asbestos wastes should also be sealed in impermeable bags.

### Monitoring Requirement

Employers were required to monitor their worksites for asbestos levels when the federal standard first went into effect in July 1972, and at least every six months thereafter if the exposure exceeded 5 fibers. Thus, affected employers should have monitored their worksites at least 8 times by January 1976.

Workers have the right to observe monitoring and have access to the re-

### Asbestos-Related Diseases

#### ASBESTOSIS:

- Kills 1 out of 10 asbestos workers
- Usually appears 10–20 years after exposure
- Scar tissue forms around asbestos fibers embedded in lungs
- Breathing becomes difficult
- Cigarette smoking increases severity

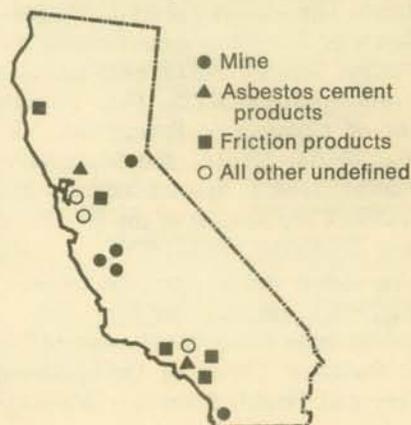
#### CANCER:

- Lung cancer kills 2 out of 10 asbestos workers (7 times the expected rate)
- May affect lungs, stomach, intestine, or rectum
- Usually appears 20–40 years after exposure
- Cigarette smoking increases risk
- Asbestos workers who smoke have 8 times the risk of dying from lung cancer compared to smokers in the general population and a 92 times greater risk than nonsmokers in the general population

#### MESOTHELIOMA:

- Kills 1 out of every 10 asbestos workers
- Usually appears 20–40 years after exposure
- A rare cancer of the chest, lung, or abdominal cavity lining
- Invariably fatal within one year after first symptoms appear
- Nonsmokers are as affected as smokers

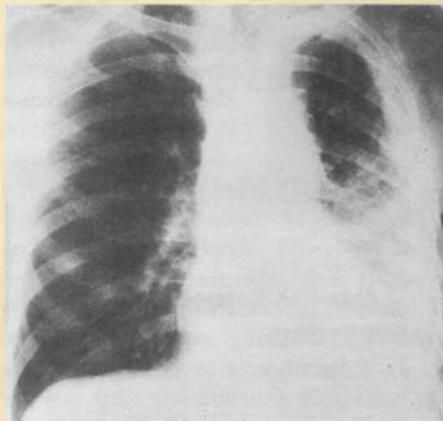
### Major Asbestos Mining and Manufacturing Facilities in California



Arthur D. Little Inc. Report

sults. The federal OSHA asbestos standard requires that these monitoring records be kept only 3 years. (The California regulation does not specify a retention period). After examining these monitoring records, local unions should include copies in their permanent union files on members' asbestos exposures. This information could become crucial documentation if any members later develop asbestos-related diseases.

Any employee exposed to asbestos in excess of the allowable limit must be informed in writing within five days of the finding and told the corrective actions being taken. (See Aug./Sept. MONITOR for how to enforce these provisions.)



*Pleural mesothelioma in the left lung of an asbestos insulation worker*

### Medical Examinations

Employers were required to provide medical examinations for any workers exposed to asbestos at levels exceeding the OSHA standard on or before January 31, 1973, and at least annually thereafter. Thus, affected employers should have conducted three sets of medical examinations (including chest x-rays and lung function tests) by the end of January 1976.

Workers have the right to request

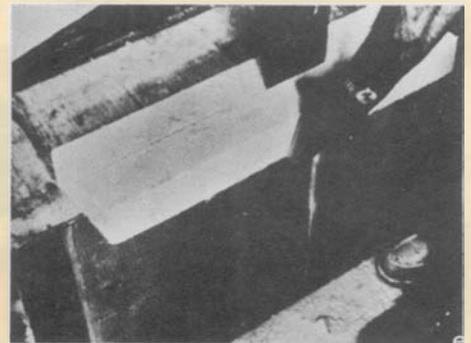
these results through their private physicians. This is an especially wise move because many company doctors have been known to withhold information from affected workers on occupation-related illnesses. A California worker won a \$351,000 settlement when the physician hired by his employer (Johns-Manville) neglected to tell him he was developing serious lung disease.

Under the California regulation, medical records must be retained for 30 years (the current federal standard requires only 20 years).

### Experience Under the Standard

In a 1973 survey of Connecticut plants using asbestos only 14 out of 24 had monitored the air and only 7 had provided periodic medical examinations including the required x-rays. There is evidence that other states have equally dismal compliance records. Most California workers exposed to asbestos who have contacted LOHP have never had regular medical examinations or chest x-rays. If you believe your employer is not in compliance with any or all provisions of the asbestos standard you should inform your employer of the standard. If no action is taken, then you should file a CAL/OSHA complaint.

At a Tyler, Texas plant owned by Pittsburgh Plate Glass, the workers did not discover how deadly asbestos was until years after the company knew. As



*Asbestos contamination from insulation material*

a result, hundreds of workers who passed through the small plant may die from asbestos exposure. Don't let this happen to you. Demand that your employers carry out their responsibilities under the asbestos standard. Demand access to all monitoring and medical information. Your employer should not know more about your health than you.

LOHP is interested in building a case file of all local unions in California with members exposed to asbestos on their jobs. If you mine, manufacture, or use asbestos please let us know your:

- local union, name (or union representative)
- the name and address of your plant
- the way in which you are exposed

Also let us know if we can provide you with additional information on the hazards of asbestos and what you can do about them.

## HEALTH HAZARD ALERT

### Trichloroethylene

Animal studies conducted by the National Cancer Institute indicate Trichloroethylene (TCE) is a possible potent liver carcinogen (cancer cause). This substance is a colorless, volatile and nonflammable liquid. 90% of all TCE produced is used by the metal degreasing and drycleaning industries. It is also an ingredient in printing inks, paints, lacquers, varnishes, and adhesives. It has been used to extract caffeine for decaffeinated coffee and as a general anesthetic and analgesic. TCE is found in such common products as Brush Top Spot Remover, Trichlor, Sears Air Freshener, and Carbona Cleaning Fluid. In the U.S., approximately 280,000 workers are exposed to trichloroethylene.

Trichloroethylene's other toxic effects are well known. When inhaled, acute exposure causes visual disturbances, mental confusion, fatigue, and sometimes nausea and vomiting.

These effects may be accentuated by visual disturbances and incoordination leading to poor manual manipulation and therefore unsafe mechanical operation. Inhaled by pregnant women, TCE passes directly to the fetus. Ingested, TCE leads to respiratory failure or cardiac arrest causing death (signs and symptoms of toxicity may be delayed for several hours). Prolonged skin contact causes local irritation and blisters. Under industrial conditions, repeated immersion of the hands in TCE has caused paralysis of the fingers.

The current OSHA standard for trichloroethylene is 100 ppm (525 mg/m<sup>3</sup>). In 1973, NIOSH transmitted criteria for a recommended standard on TCE to the Department of Labor. The criteria document acknowledged that the current standard of "100 ppm will protect most of the workers but with probably very little margin of safety at this level of exposure."

## CLEARINGHOUSE

Studies of work-related injuries and illnesses in selected industries published by the U.S. Department of Labor's Bureau of Labor Statistics from 1940 and 1970 are now available from the National Technical Information Service (NTIS).

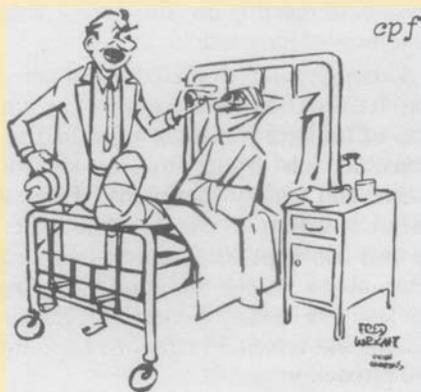
The 56 studies include data from 30 selected industries and provide a unique source of data about causes of accidents and of nationwide injury rates by occupations. The studies are available individually or as a set in microfiche or paper copy. Sets are \$45.00 each and may be ordered from NTIS, U.S. Department of Commerce, Springfield, Virginia 22161. Orders should specify: BP-243125/SET, Special Industry and Accident Case Studies of the Bureau of Labor Statistics, 1940-1970.

An index and a price list of individual titles and an order form may be obtained from either the Bureau of Labor Statistics, Office of Occupational Safety and Health Statistics, Washing-

ton, D.C. 20212 (202-523-9281) or at any of the regional offices.

A useful reference source is "How to Use OSHA: A Workers' Action Guide to the Occupational Safety and Health Administration," prepared by Urban Planning Aid, a Massachusetts group helping workers understand and do something about job hazards. Order the booklet from the Occupational Health and Safety Project, Urban Planning Aid, 639 Massachusetts Ave., Cambridge, Mass. 02139.

"Best's Safety Directory—1976" has been published with updated OSHA guidelines, operational safety techniques, and product buyers' guides in 73 categories. Subjects include safety management, protective apparel, noise, machine guarding, materials handling, electrical and lighting safety, fire prevention, sanitation, employee health, and environmental controls. The 1,052-page volume costs \$20; quantity discounts on request. Order from A. M. Best Co., Oldwick, N.J. 08858.



"You clumsy idiot . . . On account of you Department Six lost the safety award . . ."

## RECENT EVENTS

### Three Recent Deaths Resolved by the Courts

—Jesse Blaine Graner, doing business as Graner Oil Co. of Torrance, was fined \$625.00 for violation of Labor Code Section 6423(a). A 19-year-old employee was killed last March after a portable oil well derrick on which he was working toppled over during high winds. The derrick's guy lines were not properly anchored or set at the proper distance from the derrick. Not enough guy lines had been used for the derrick.

—De Menno Enterprises was placed on 12 months summary probation on the condition it pay a fine of \$1,000 plus a \$250 penalty assessment and commit no further violations of the safety order. A 51-year-old workman was killed, after falling from the top of a 20-foot high cylindrical vessel, which had ruptured because of the uncontrolled use of compressed air.

—Arrowhead Puritas Waters, Inc. (subsidiary of Coca Cola Bottling Company of Los Angeles) was fined \$10,000 plus \$2,500 penalty assessments for failing to equip moving machinery with adequate means to disconnect the power supply in case of emergency. A 22 year-old lift truck driver, whose job required him to lean over an unguarded spinning machine roller, choked to death when his loose scarf tangled in the machine. —*Cal-OSHA Reporter*

### New Weapon in Battle Against Discrimination

Two women won workers compensation suits to the tune of \$67,500.00 claiming discrimination caused their

emotional on-the-job illness. Angela Davis, a collection clerk at American Medical International, Inc., was hospitalized for 3 months after her supervisor allegedly insulted her repeatedly because of her Mexican heritage. She received \$50,000 in settlement. Marie Louis Glass, who works for Northrop Corp., suffered severe depression recently when her boss allegedly promoted men in her department whom she had trained while demoting her. She received \$17,500 plus medical expenses. —*Los Angeles Times*

### Indiana OSHA Proves Failure

Political patronage by the Indiana State Department of Labor has rendered IOSHA ineffectual and useless. A recent AFL-CIO conference held in Indianapolis condemned the Indiana Commissioner of Labor in charge of Indiana OSHA, for having fallen short in almost every aspect after 1½ years of OSHA's establishment. A motion was made to have a bill introduced into the State House of Representatives repealing the Indiana Occupational Safety and Health Act.

Out of 9,000 inspections, state inspectors issued only 11 serious citations and no fines. Few labor representatives are included among the inspectors. Persons without any industrial background such as bartenders and beauticians currently function as inspectors.

In response to the charges, the Commissioner said he felt the lack of fines was proper, that fines impose unnecessary hardships on industry. He believes in voluntary compliance and does not

*Continued on next page*

Published monthly by the Labor Occupational Health Program, Institute of Industrial Relations, University of California, 2521 Channing Way, Berkeley, California 94720. (415) 642-5507

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## DOCTOR'S CORNER

Donald Whorton, M.D.

Dear Doc:

Recently, a medical testing company offered our union executive council a screening service at a group rate of \$25 per person for 16 different tests. Ordinarily, the tests would cost more than \$150 if taken on an individual basis. The company's representative maintains that the service will screen our members for many common diseases, including those which are occupation-related. The issue has split the council. Can you advise us?



How do you decide if a medical testing package is what you want? The most important question is whether you're interested in your members' general health status or any possible harmful effects of their work environment. If the latter, then what specific effects do you wish to discover?

As in other fields, medical technology has increased production and decreased costs per unit. Many hospitals now use a SMA-6 or SMA-12 machine to perform 6 or 12 simultaneous blood tests. These machines do the tests much faster, are probably more accurate, and are less expensive. Hospitals and health organizations have also developed elaborate low-cost screening test programs. A leading example is Kaiser Medical Foundation's Multiphasic. Most testing services are designed to detect com-

mon health problems. Usually, they do not detect specific occupation-related disorders. However, if you are interested in general health, I would suggest any testing service also include blood pressure measurement. High blood pressure affects up to 20% of this country's adult population. Yet, less than half know they have high blood pressure. Untreated, it will result in heart disease, strokes, and kidney damage, all leading to premature death. If blood measurement is not included, you should probably consider obtaining screening services from another source.

The picture is very different if you wish to screen for occupation-related disease. Then, you would need to know the problem-producing agents in the work environment, how the body is affected, and which tests identify related health problems. For example, if lead exposure is a potential problem, your health screening program should test the blood for lead levels. Workers exposed to lung disease-producing dusts such as silica or asbestos should have periodic chest x-rays as well as lung-function tests. Likewise, the lungs of workers who produce polyurethane foams may be affected by an asthma-like syndrome. Such workers should be given lung-function tests prior to beginning a work week and again after one or more work days. Workers exposed to solvents such as trichloroethylene should have liver and kidney functions evaluated. Workers exposed to benzene should have their blood counts monitored.

I would first recommend that an assessment be made of workers' particular medical needs prior to selecting the

most appropriate screening tests. Occupation-related health screening programs should be designed to test specific hazards' effects. The meaning of an abnormal test and the expense of determining its validity are also important considerations when deciding on a particular program.

I am willing to help evaluate such proposals any others of you have now or may receive in the future. Your decisions should insure the screening program you choose monitors exactly what you wish. Otherwise, the money spent will produce little meaningful information.

*Requests for information on your work problems should be addressed to: Dr. Donald Whorton, LOHP, 2521 Channing Way, Berkeley, CA 94720.*

### RECENT EVENTS (Cont'd)

want to hurt industries. He attributed the lack of citations to the difficulty getting around to all workplaces and the shortage of inspectors. He also admitted that until recently the IOSHA staff had not included an industrial hygienist because until recently he "did not have an awareness of the need."

Although short-staffed by comparison, federal OSHA inspectors for the state of Indiana are doing a fair and responsible job trying to correct the health and safety problems. Federal OSHA is willing to cite and fine industry and has kept communications with labor about safety violations. During the last 1½ years, Federal OSHA in Indiana has issued 33 citations from the 390 inspections made.

—Local 1014 Journal

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# MONITOR

VOL. 3 NO. 2 • FEBRUARY 1976

## HEALTH AND SAFETY CONFERENCE DRAWS LOCAL TRADE UNIONISTS

By SIDNEY WEINSTEIN

More than 100 participants recently attended a LOHP sponsored conference on health and safety at Asilomar (Pacific Grove). It was the first time that such a conference had been held solely for designated health and safety representatives. The conference was organized by Robert Fowler, LOHP Labor Coordinator. Participants represented a variety of industrial, building, and crafts unions as well as trades not covered by Cal/OSHA such as the railroad workers and other groups minimally protected by Cal/OSHA such as public sector employees.



Tony Mazzocchi addresses conference delegates at opening session.

### KEYNOTE SPEAKER

On opening night keynote speaker Tony Mazzocchi (OCAW Legislative Director) set the tone for the three, fast-paced days. He raised key issues about organized labor's role in occupational health and safety, the direction of future legislation, the state vs. federal programs, and labor's participation in the standards-setting process and workplace monitoring.

The same issues were raised later by the CBS film, "Kepone," which graphically illustrates what can happen to workers not protected by union health and safety contract language, toxic

substances control legislation, or a use-permit registration system.

Allied Chemical had conducted research on Kepone's hazardous effects though this information was never made available to Life Sciences employees. With toxic substances control legislation, the government could have required premarket testing on Kepone prior to authorizing its commercial production. A use-permit registration system would have required Life Sciences to register Kepone with the state and demonstrate adequate employee protections before beginning manufacture, use, or sale of Kepone.

A union could have negotiated health and safety contract language requiring Life Sciences to implement a monitoring program for all new substances and inform the union of all results.

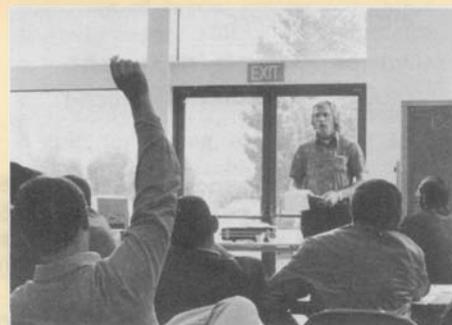
### WORKSHOPS

Six workshops—Local Union Health and Safety Committee Formation, Collective Bargaining for Safety and Health, Employee Rights and Responsibilities Under OSHA and Cal/OSHA, Monitoring the Workplace, Evaluating the Membership's Health, and Workers' Compensation—conducted by LOHP and Labor Center staff (Institute of Industrial Relations) with discussants from local unions provided an overview of the field. LOHP plans more detailed one-day follow-up sessions later in the year.

#### Local Union Health and Safety Committees

Led by Robert Fowler, LOHP, with discussant Barry Barr from UAW Local 560, this workshop covered how to set up a committee and the responsibilities of the committee, stressing the importance of continuous communication with the membership.

Prior to setting up a local health and safety committee, a union task force should evaluate: 1) The membership's



Bob Fowler outlines strategy of forming health and safety committees.

accident-injury-illness experience; 2) The employer's annual actual and hidden costs of accidents, injuries, illnesses; 3) Existing contract language and interpretations; 4) Local union by-laws; and 5) Limitation and effectiveness of any existing joint management/labor health and safety committees.

Local union by-laws frequently provide for health and safety committees. The committees could coordinate all local union health and safety programs, obtain needed technical information, and assist members with Cal/OSHA and OSHA complaints.

The committee should be well-acquainted with workplace conditions and conduct periodic surveys of the workplace. Additionally, the committee should: provide employers an opportunity to settle complaints internally; participate in Cal/OSHA and OSHA inspections and complaint procedures; maintain health and safety records; screen workers' compensation cases; report to membership; and educate membership in job health and safety.

#### Collective Bargaining for Safety and Health

This session, led by Paul Chown, Labor Center, with discussant Rich Jackson from IAM Local 1781, pointed out the bargaining table's usefulness for tightening up Cal/OSHA and OSHA ambiguities and for filling in areas of weak coverage. For ex-

Continued on page 4

# MAJOR PROVISIONS OF ASBESTOS STANDARDS

By ANDREA HRICKO

In the January, 1976 issue of *Monitor*, I discussed workers' rights under the asbestos standard. Since the U.S. Department of Labor has proposed a new standard for asbestos, the chart below compares the major differences in the current standard and the new proposal.

Low level exposures to asbestos will still be allowed under the proposal; therefore the new standard will not guarantee workers safety against cancer risks. In fact, workers exposed to very low dust levels have also developed cancer. Even the Secretary of Labor, in the preface to his proposal, states that "OSHA recognizes that there is no assurance of a safe exposure for a substance with known carcinogenic [cancer-causing] property, in this case asbestos, and thus there should be no detectable concentrations [of asbestos in the air]." The reason that potentially hazardous levels of asbestos will still be allowed under the proposal is that OSHA has taken the position that the economic cost factors of zero detectable exposure outweighs the potential benefits to workers.

## CURRENT OSHA STANDARD

Construction industry included

**Permissible exposure—"TLV":** 5 million fibers per cubic meter or 5 fibers per cubic centimeter (to be lowered to 2 million in July 1976) over an 8-hour workday.

**Permissible ceiling exposure:** 10 million fibers for 15 minutes of exposure.

**Monitoring:** required every 6 months after an initial determination is made that the levels of asbestos exceed the TLV.

**Notification:** Not spelled out in federal standard; required in California when over-exposure occurs.

**Recordkeeping:** Monitoring records must be kept only 3 years; medical records must be kept 20 years (30 years in California).

**Medical surveillance:** Complete physical exams must be provided annually to all "exposed" workers. (In California, to all workers exposed to over 1 fiber asbestos per cubic centimeter).

**Signs:** Caution signs and labels do not mention cancer risk.

**Laundering:** People who launder contaminated clothes must be told the hazard and controls needed.

## PROPOSED OSHA STANDARD

→ Construction industry excluded (OSHA will develop a separate standard)

→ 500,000 fibers per cubic meter over an 8-hour workday (or 1/2 fiber per cubic centimeter).

→ 5 million fibers for 15 minutes.

→ Required monthly if employer is over TLV; every three months if employer is within TLV; less often if TLV is not exceeded on two consecutive monitorings.

→ Workers must be notified in writing of asbestos levels within 5 days after monitoring results are received.

→ Both monitoring and medical records must be kept for 40 years (or for the duration of employment plus 20 years, if longer).

→ Exams must include sputum cytology for workers over 45 and for those exposed over 10 years to asbestos.

→ Signs and labels must say that asbestos is a "CANCER HAZARD."

→ The employer must clean or launder contaminated clothing, and advise cleaners of hazards.

## PROVISIONS FOUND IN BOTH STANDARDS

**Observation of monitoring:** Workers can observe monitoring and have access to records.

**Methods of compliance:** Personal protective devices shall be used only as a supplement if engineering controls and work practices do not keep exposure within TLV.

**Hand-tools:** If asbestos fibers are released, tools must have local exhaust ventilation systems.

**Work practices:** Wet methods for handling asbestos shall be used wherever possible to keep dust down.

**Removal of asbestos:** Asbestos must be wetted or enclosed before being removed from containers; impermeable, sealed containers shall be used to dispose of asbestos fibers.

**Respirators:** An employee who cannot wear a respirator for medical reasons must be transferred to another job without loss of pay.

**Hygiene facilities:** Special clothing, change rooms and clothes lockers must be provided.

Interested persons are urged to submit comments on any or all parts of the proposed standards on or before April 9, 1976.

Send 4 copies of your comments to:

Docket Officer, Docket H-033, U.S. Department of Labor, Room N-3620, 200 Constitution Ave. N.W., Washington, D.C. 20210. Telephone (202) 523-8076. Written submissions must clearly identify the provisions of the proposal addressed and the position taken with respect to each such provision.

## Important Decision on Medical Exams for Asbestos Workers

The current OSHA standard for asbestos requires that medical examinations be provided for all workers who are "exposed to airborne concentrations of asbestos fibers." Many employers have interpreted this phrase to mean that they must provide examinations only when the levels of asbestos

exceed the allowable exposure level, 5 fibers per cubic centimeter. In California the Division of Industrial Safety requires that medical exams be provided for anyone exposed to asbestos in excess of one fiber per cubic centimeter.

The Occupational Safety and Health Review Commission in Washington,

D.C. ruled in November, 1975 that ALL employees exposed to asbestos—regardless of the level—must be provided with the medical exams required by the standard. This means that brak mechanics, linoleum and tile setters, and many other groups of workers exposed to low levels of asbestos on their jobs should be provided annual medical examinations by their employers.

## DOCTOR'S CORNER

Dear Doc:

Donald Whorton, M.D.

I am a worker at a plating company. One day at work I was overcome by perchlorethylene vapors and fell from a six-foot platform, hitting my head and neck. I was told my liver was not damaged; however, I continue to have loss of smell, taste, and hearing as well as a numbness and weakness in my left arm and hand. Also, I have a dull aching pain in the back of my neck which travels to my left shoulder. Do you think the problems I am still experiencing could be due to the perchlorethylene exposure, or might they be caused by the fall?



In this situation the worker, because he was rendered unconscious by the effects of a chemical pollutant in the work environment, fell six feet over some sort of ledge or platform, striking his head and neck. Now, he has some long-term nervous system problems. The question is what was or is the cause of these problems.

This example illustrates how health problems may be inseparable from traditional safety problems. Had the worker not been overcome, he would not have fallen or injured his head and neck. To determine cause and effect, perhaps we should review the health effects of perchlorethylene. Perchlorethylene (also referred to as tetrachloroethylene) is widely used as a solvent in dry cleaning industry and degreasing operations. It is a liquid that vaporizes readily, especially when heated. The OSHA standard for perchlorethylene vapors is 100 ppm averaged over an eight-hour period.

This chemical affects the body in two general ways—superficial or irritant effects and general or systemic effects. Perchlorethylene irritates the lining of the eyes, mouth, nose, and throat. This means that it causes discomfort or burning of the eyes, nose, etc. Irritation can occur at levels just above the standard.

The chemical affects the brain and nervous system as well as the liver and kidneys. It affects the brain much the same as alcohol. The earliest effects are similar to feeling high. Greater amounts can cause the worker to become giddy, dizzy, light-headed, con-

fused, and uncoordinated. This state can progress to stupor, unconsciousness, and even death. (275–1100 ppm can produce stupor and unconsciousness. Some degree of persistent brain or nervous system damage could result from sufficiently long and concentrated exposure to the chemical.) There are tragic situations in which death resulted from the use of inadequately aired sleeping bags containing perchlorethylene vapors.

The liver is one organ of the body often injured by perchlorethylene. The method often used to assess the status of the liver is a series of laboratory blood tests. One important factor in predicting potential liver damage is to consider its condition prior to exposure. In this case, the worker was told that no liver damage had occurred. The kidneys can also be affected by chemicals such as perchlorethylene; both blood and urine tests should be performed to determine any damage.

My impression of this situation is that the complaints of this worker are probably due to damage to the brain and neck from the fall. Most of the left arm problems and the traveling (neck to shoulder) pain are most likely caused by damage to nerves going from the neck to the arm. It is also possible that the worker suffered a brain concussion (bruise) as a result of the fall. The loss of smell and taste are probably more related to the fall than the chemical. The loss of hearing may be related to long-term exposure to noise rather than either the fall or the chemical. This is an excellent illustration of the difficulty in attempting to artificially separate safety hazards from health hazards in the workplace.

*Requests for information on your work problems should be addressed to: Dr. Donald Whorton, LOHP, 2521 Channing Way, Berkeley, CA 94720.*

## Kepone Producer To Get Hearing

Richmond, VA (AP)—The Occupational Safety and Health Administration (OSHA) has begun hearings on whether the defunct Life Science Products Co., Inc., the producer of Kepone (roach and fire ant pesticide) should be fined \$16,500 for allegedly violating federal health and safety regulations.

Nineteen former Life Science employees are among the witnesses scheduled to appear at the OSHA hearing. The hearing was scheduled after the OSHA fines proposed in mid-August

*Continued on page 8*

## HEALTH HAZARD ALERT

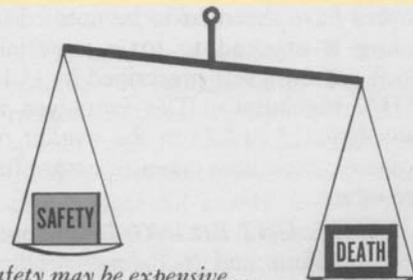
### Toxic Effects of Sodium Hydroxide

Sodium hydroxide, also called caustic soda, soda lye, or white caustic, is produced commercially by electrolysis (decomposing a chemical compound by electrical current) of a sodium chloride solution, or from lime and soda ash. The National Institute for Occupational Safety and Health (NIOSH) estimates that 150,000 workers are potentially exposed to the alkali. It is used in the manufacture of rayon, mercerized cotton, soap, paper, aluminum, petroleum, chemicals, and dye-stuffs. It is also used in chemical industries, in metal cleaning, electrolytic extraction of zinc, tin plating, oxide coating, laundering, and bleaching.

Local contact of sodium hydroxide with eyes, skin, and the digestive tract has resulted in extensive damage to tissues, with resultant blindness, burns, and perforations of the digestive tract. During the tissue regeneration process in the digestive tract, some cancers have developed.

On September 16, 1975, NIOSH transmitted a criteria document to the Department of Labor which recommends a ceiling concentration of 2.0 milligrams sodium hydroxide per cubic meter of air, as determined by a sampling period of 15 minutes. Thus high excursion levels would be avoided. The present federal standard is 2.0 milligrams per cubic meter as an 8-hour time-weighted average concentration.

NIOSH also recommends that workers exposed to sodium hydroxide have comprehensive preplacement medical examinations. Additionally, medical examinations should be made available in the event of eye, face, and skin contact with sodium hydroxide. Engineering controls should be used wherever feasible to maintain airborne sodium hydroxide at concentrations below the prescribed limit, and respirators should be used only in certain nonroutine or emergency situations.



## HEALTH AND SAFETY CONFERENCE (cont'd)

ample, the steel workers successfully negotiated for the employer to pay for steel-toed shoes and prescription safety glasses. Neither was specifically prescribed by law.

The bargaining table can also be used to: 1) Provide protections for members who refuse to work under unsafe conditions; 2) Prevent companies from using physical examinations to weed out employees or transfer those with health problems, reducing pay and seniority; 3) Require employers to regularly report illnesses, deaths, and accidents to the union; 4) Require provisions for health and safety training for employees; and 5) Require health problems such as noise to be engineered out of machinery.

Some memberships are now beginning to sue their unions for inadequately bargaining health and safety issues. Unions should avoid agreeing with management not to negotiate health and safety issues. In 9 cases out of 10 such an agreement ties labor's hands.

### Employee Rights and Responsibilities

Led by Andrea Hricko and Morris Davis of LOHP with discussant Tony Wilkinson from ILWU Local 6, this session highlighted the background of federal legislation and employees' rights under Cal/OSHA:



Andrea Hricko and Morris Davis explain Cal/OSHA provisions.

1) **RIGHT TO INFORMATION.** Employees have the right to be notified in writing if exposed to toxic materials which exceed levels prescribed by Cal/OSHA regulations. The employer is also obligated to inform the worker of protective measures taken to assure future safety.

2) **COMPLAINT FILING.** Documenting complaints and including specifics are important ways to insure the DIS acts quickly. Complaints should: identify the problem; specify whether it's a

health or safety problem; locate the problem; and identify symptoms or how many have already been injured.

3) **DISCRIMINATION COMPLAINTS.** Workers have a right to file a complaint with the Labor Standards Enforcement Division if they feel they have been discriminated against as a result of exercising their Cal/OSHA rights. The complaint form must contain sufficient documentation to enable the hearing officer to understand the facts and sequence of events. Participation in a discrimination complaint hearing can be a long drawn-out process. The employee should be accompanied by a representative (health and safety committee member and/or counsel) to cross-examine witnesses, present the case, and record the conduct of the hearing process. Currently, employees lose about 50% of their cases. Part of the problem is that by keeping the hearing process "informal," evidence criteria have never been clearly established. In appropriate cases, employees should be prepared to appeal negative decisions by filing a Complaint Against the State Program Administration (CASPA) with Federal OSHA.

4) **INVOLVEMENT IN STANDARDS SETTING.** Workers should have copies of the DIS General Industry Safety Orders. Workers can petition Cal/OSHA for new standards, and submit information relevant to proposed standards and testify at standards hearings. However, such involvement requires time off to participate (perhaps negotiable as part of contract language). Workers should request that public hearings on proposed standards be scheduled at times other than regular working hours to insure broader participation.

### Monitoring the Workplace

Led by Janet Bertinuson, LOHP, with discussant Ken Fox from ILWU 34, this session discussed how to evaluate the workplace environment.

After setting up a Health and Safety Committee, members should walk through the worksite gathering information and pinpointing potential hazards. They should note: (1) whether a work process is isolated or close to other processes; (2) how many workers are involved; (3) the substances used in and materials manufactured by each process; (4) ventilation systems and outlets; and (5) physical hazards—noise, heat, cold, radiation.

The best monitoring procedures cover the same time period as the stan-



Janet Bertinuson answers question on noise monitoring.

dard. Always try to sample contaminants and noise at the point of exposure. The best air contaminant sample is taken from a sampler carried on the person for eight hours. The further away from continuous eight-hour samples, the less representative your findings will be unless contamination is always constant.

The standards are merely guides. The threshold limit values are based on the best currently available information. There is very little research on most substances used in the workplace. Also, in conflict with the OSH Act's requirement that all workers' health be protected, most threshold limit values allow an "acceptable" number of workers to become ill. For example, 20-22% of those consistently exposed to the current noise standard (90 dB) will suffer hearing loss. Standards hearings are open to the public. Organized labor can attend, present testimony, and submit written opinions. Register with the Standards Board to receive hearing notification.

Purchase monitoring equipment after evaluating: your needs; the equipment's accuracy (check with the State Health Dept. or NIOSH); the equipment's cost; and the equipment's utility—how portable, how easy to calibrate and where, how often needing calibration.

### Evaluating the Membership's Health

This workshop was led by Don Whorton, M.D., with Rex Cook from OCAW Local 1-5 as discussant. The session provided information about con-



Medical screening procedures were discussed by Donald Whorton.

cepts, pitfalls, problems, and controversies of occupational health screening.

Unions considering health screening programs should first evaluate the potential hazards at their workplace and then seek answers to the following questions: 1) are the tests appropriate for the potential job-related diseases, 2) is the person performing the tests qualified, 3) will the test results be specific to the problem or only general, and 4) how will the individual be told the results of the tests. After setting up a program, you should consider who will have access to the results—the union and/or the individual.

The medical record belongs to the examined individual even when the employer has paid for both the testing and evaluations. Individuals may request test results directly from the testing physician or have their private physician request these results.

The significance and use of most common testing methods discussed included: blood test of various types, x-rays, spirogram for lung function, urine tests, electrocardiogram for heart evaluation, cytology testing for cancer detection and audiogram for hearing loss. High blood pressure should be checked in any screening program. Workers should be aware of poor screening practices, such as pre-employment back x-rays. There is little scientific information that this procedure does anything except expose individuals to excessive radiation. Another example—using urine tests instead of more reliable blood tests to detect lead exposure.

Rex Cook discussed Local 1-5's screening program and the pitfalls experienced by local unions developing their own programs. He emphasized the membership's fear that the test results could be used in a discriminatory manner unless kept from employers.

### Workers' Compensation

This session, led by Bruce Poyer of the Labor Center with discussant Dan Berman, Ph.D. from Boston University and author of *Death on the Job*. Workers' Compensation provides little employer incentive to clean up the workplace. Employers pay only 1% of their payrolls for Workers' Compensation claims—except the logging industry which pays 25–30%. Workers' Compensation claims are paid by outside insurance companies not employers.

Compared to malpractice suits which may run into the millions in cases of



Bruce Poyer and Dan Berman conduct workers' compensation session.

death, Workers' Compensation pays only \$40,000 maximum disability. Claimants are forced onto the welfare rolls. In addition, the onus is on the employee-claimant to prove the injury or illness arose "out of and in the course of employment." Occupational disease, accounting for only 1% of all Workers' Compensation claims, is inadequately provided for by the Workers' Compensation system.

The new California requirement that the state program vocational rehabilitation be long-term doesn't change the low maximum benefits. Also, a second new provision that claimants can now choose their own physicians, while a distinct gain, is still offset by the few physicians trained in occupational medicine.

Under proposal now, federalization of the Workers' Compensation system offers some improvements—the possibility of federal taxation as an alternative to third-party insurance companies and their profits (40% per claim), more effective and equitable coverage from state to state, and transferring the burden of proof to employers, who would be required to demonstrate they abided by all possible controls.

However, the system would be greatly improved if workers had the right to sue without losing their Workers' Compensation benefits where intentional negligence can be proved. As the law now stands, workers may not sue their direct employers. One 58-year-old, severely disabled asbestos worker won a \$350,000 malpractice suit against the physician-consultant for withholding health records in addition to a Workers' Compensation claim. This worker was lucky. Had the physician been on company payroll the workers' only recourse would have been Workers' Compensation with its limited benefits.

### OTHER CONFERENCE EVENTS

On the second night Cal/OSHA and OSHA representatives discussed the status of Cal/OSHA. Panelists were: recent Cal/OSHA appointees, DIS

Deputy Chief Mike Schneider; DOH Chief of Occupational Health Section David Parkinson, M.D.; Hamilton Fairburn, Federal OSHA Associate Regional Director; and Ken Larson, Federal OSHA Labor Liaison.

At the Conference's closing session, Eric Frumin, a member of the research department of the Textile Workers Union of America, described the union's efforts to improve the cotton dust standard. He encouraged conference participants to support the North Carolina textile workers' efforts to obtain representation.

Finally, establishment of a rank-and-file organization, the California Labor Association for Safety and Health (CLASH) was proposed by conference attendees. Its purpose—to inform rank and filers about job health and safety matters and take public positions on the issues.

To plan CLASH organizational efforts, conference participants appointed an ad hoc steering committee—Barry Barr, UAW; Cliff Haskell, Sacramento Fire Fighters; Rich Jackson, IAM; John Burke, UTU; and Dave Reese, IBEW.



CLASH ad hoc steering committee appointees.

CLASH plans to: 1) conduct low-cost, one-day job health and safety seminars for local union members in which participants could develop positions; 2) express positions by: press conferences and releases; position papers sent to public agencies including OSHA; testimony at public hearings; lobbying; and screening proposed public agency appointments.

The conference ended with a general critique by participants. Suggestions ranged from having such a conference spread over a one-week period to conducting more intensive sessions for specific trades. All LOHP members were encouraged by the interest and enthusiasm shown. We thank all health and safety committee representatives and conference guests for making this a rewarding and successful conference.

## RECENT EVENTS



### Textile Union Sues For Strict Cotton Dust Standard

Washington, D.C.—The AFL-CIO Textile Workers' Union of America and the North Carolina Public Interest Research Group have filed a joint suit to compel the Secretary of Labor to provide textile workers with better protection against the hazards of cotton dust.

The action was filed in the U.S. District Court for the District of Columbia. It requested the Court to issue an order directing the Secretary to begin without further delay formal proceedings for the establishment of more effective cotton dust standards and to grant any further relief that may be proven just and proper. It also asks the Court to award the plaintiffs reimbursement for the cost of their legal action.

Sol Stetin, TWUA general president, said the Department of Labor repeatedly excused its failure to act on the claim that it was waiting for NIOSH to compile a criteria document on cotton dust. Actually, Stetin charged, the delay was a political favor from the Nixon Administration to textile manufacturers for their support in the 1972 Presidential election campaign.

#### No Action After 16 Months

The NIOSH criteria document was finally completed in September, 1974, and a formal petition for modification of the cotton dust standard was filed by TWUA on January 13, 1975. Thus 16 months had elapsed since the NIOSH findings and 12 months have also gone by since the union's petition was originally filed. The TWUA president called the delay "deliberate and unconscionable." As a result, thousands of textile workers are being added to the ranks of the disabled and unemployed.

The North Carolina Public Interest Group estimates that the textile industry has 800,000 potential cases of bys-

sinosis, the crippling lung disease caused by exposure to cotton dust. The dangers are particularly severe in North Carolina because approximately one-third of the nation's textile workers are located in that state. North Carolina state health officials concede that 15,000 active textile workers in the state are victims of byssinosis, or "brown lung" as the disease is commonly known. This estimate does not include retired and former textile workers, who are often the most seriously affected.

### Former Apprentice Wins \$4.7 Million In Injury Suit

Los Angeles—Richard Rodriguez, a 27-year-old former apprentice sprinkler fitter, was recently awarded over \$4.7 million by a Superior Court jury for injuries resulting from an industrial accident. In 1970 Rodriguez was paralyzed from the chest down, when a 630-pound pipe fell on him. The award is the largest court verdict ever granted in California for an on-the-job injury.

The verdict includes \$4,235,996 for Rodriguez's lost lifetime earnings, medical bills, round-the-clock care, special therapy, pain and suffering and humiliation. It also includes \$500,000 damages to Mrs. Rodriguez for loss of sexual relations with her husband and loss of the ability to conceive offspring.

The key factor in the case was the question of responsibility for an improperly cut angle iron or brace that permitted the pipe to fall. Since the workers' compensation laws prohibited Rodriguez from suing his own employer, a third party negligence suit was instituted against Norman Engineering Co. and Bethlehem Steel Corp. The jury found that Norman Engineering Co. was liable as the general contractor that constructed the building where the accident occurred. Bethlehem Steel was found liable based on the fact that they were primarily responsible for the improperly cut angle iron.

### New DIS Officials Appointed

Arthur R. Carter, secretary-treasurer of the Contra Costa Central Labor Council (AFL-CIO), has been appointed chief of the State Division of Industrial Safety by Governor Edmund G. Brown, Jr.

Carter, 34, has held his post with the Contra Costa Central Labor Council, with headquarters in Martinez, since January 1, 1968. He succeeds David Chambers, who resigned to accept appointment by Governor Brown

to the State Youth Authority Board. Carter is a political science graduate of Sacramento State College. He was a business representative for the Hospital Workers Local 250 of the Service Employees International Union (AFL-CIO) in San Francisco from 1965 through 1967. He has been active in a number of civic organizations in the Richmond and Martinez areas and was a member of the Contra Costa County Grand Jury in 1971.



Arthur R. Carter Michael M. Schneider

Governor Brown also appointed Michael M. Schneider to the post of deputy chief of Industrial Safety, in the State Department of Industrial Relations. This is a new position with expanded "line authority" stemming from a realignment of the division's top management, said Donald Vial, the director of Industrial Relations. Schneider, 47, has been a labor-management liaison official in the division since last fall. Before that, Schneider, an electrician by trade, was a staff planner in economic development and manpower training in the San Francisco mayor's office.

Vial said the new deputy chief's position will focus greater management responsibility on the coordination and use of professional resources in the division to work toward reduction of the number of accidents, deaths, and disease in high-risk industries and occupations.

### Labor Representatives Appointed To Cal-OSHA Boards

Two labor representatives were recently appointed by Governor Edmund G. Brown, Jr., to positions on the Cal-OSHA Standards and Appeals Boards.

Harold Dean Mitchell has been appointed as chairperson of the California Occupational Safety and Health Appeals Board. Mitchell served as an organizer for Local 509 of the United Auto Workers prior to his appointment to a four-year term on the Board last November. He had also served as chair-

person of the union's health and safety committee and was active in worker health and safety education programs.

The Cal-OSHA Appeals Board is a quasi-judicial body empowered to settle disputes arising from citations and notices issued for violations of state job safety and health regulations.

H. Jerry Martin has been appointed a member of the California Occupational Safety and Health Standards Board. Martin is an official of Local 3 of the International Union of Operating Engineers in San Francisco. He is also director of safety and training for the union.

The Cal-OSHA Standards Board is primarily responsible for adopting health and safety standards and conducting hearings on requests for permanent variances.

### Nader Calls Cancer a 'Corporate' Disease

Consumer advocate Ralph Nader says cancer should no longer be considered a strictly medical disease but should instead be called "corporate cancer." Speaking at a recent meeting sponsored by the Congressional Environmental Study Conference, Nader said that if 80% of cancers are environmentally caused, then the majority are caused by the products of business and industry.

He stated that the public should think of cancer as "corporate cancer, caused by carcinogens traceable to pesticides and other chemicals produced by corporations and allowed to enter the air, land and water throughout the country and the world."

"We are clearly entering what historians of the future may call the carcinogenic century," he said. Nader advocated that new chemicals and pesti-

cides should be tested before being put on the market, rather than after. He also called for standards of accountability for civil servants who are charged with enforcing environmental laws and regulations, and a redirection of federal research funds from what he said was a concentration on "noncontroversial research." *United Press International*



### Fire Fighters Release Death and Injury Survey

Fire fighting continues to be the most dangerous occupation in the United States, with 84 fire fighters per 100,000 losing their lives on the job during 1974, according to the latest survey of the International Association of Fire Fighters (IAFF).

The fire fighting on-the-job death rate compares with 71 per 100,000 for mining, next highest category, and 51 per 100,000 for police. The 1974 figure for fire fighters is 23 percent higher than the 1973 rate. Other significant findings included:

- Occupational disease forced 604 fire fighters to change occupations or

retire during the year. Of these, 371 had heart disease and 110 had lung disease.

- Occupational diseases claimed the lives of 111 fire fighters during the year, 79 percent of them from lung disease.

- Fire fighters had 47.3 job injuries per 100 workers during the year—nearly a 50 percent chance of being injured. A total of 523 job-related injuries forced men into retirement.

The IAFF said that over the past 10 years, fire fighters have suffered an average of 86 deaths per 100,000 each year, compared to 55 per 100,000 for police. IAFF President William H. McClennan, commenting on the survey, stated "somehow, we must turn this awful death rate in a downward direction. How can we persuade public officials that in the dangerous fire service, a cut in manpower is an invitation to death . . . that economy in dollars often means extravagance in the waste of human life?"

### First Woman Coal Miner Is Killed

Sherry LaGace, 31, became the first woman coal miner to be killed by an on-the-job accident when she died December 26, 1975. LaGace was crushed in an October 25 accident while operating a wheel tractor scraper at a non-union strip mine owned by Hol-Acc Corp. in Pike County, Kentucky.

According to officials of the U.S. Mining Enforcement and Safety Administration (MESA), the machine turned over on LaGace after an engine stalled while traveling upgrade. The machine was not equipped with a roll-over protection device that apparently could have saved her life. She died two months later from the injuries suffered in the accident. —*UMW Journal*

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## CLEARINGHOUSE

### Workers' Compensation Seminar for Beginners

On March 6, 1976, the National Lawyers Guild will conduct a one-day Workers' Compensation seminar at Golden Gate Law School (536 Mission St., San Francisco, Calif.). The purpose of the seminar will be to assist participants in understanding the Workers' Compensation laws and to discuss how to go about obtaining the maximum benefits for workers. This seminar will be presented for the beginning and less experienced workers' representatives. Topics will include: (1) short history of Workers' Compensation; (2) outline of the law and initial interview; (3) working up the case; (4) preparation for the hearing; and (5) relationship of Workers' Compensation to health and safety.

Registration fees are: \$5.00 (students and unemployed); \$15.00 (non-student Guild members); and \$25.00 (for all others). Fee includes printed materials of a sample Workers' Compensation case file, outlines of procedures, checklists, bibliography and other useful information. These packets may be ordered separately for \$5.00. For further information, contact the National Lawyers' Guild at 558 Capp St., San Francisco 94110 or call (415) 285-5066.

### Health and Safety Training at Ohio State

The Hazard Recognition Program at Ohio State University is designed for workers who are not only interested in health and safety issues, but are also responsible for helping to solve many of the problems. This free program provides basic information and skills needed to recognize, evaluate and correct workplace hazards.

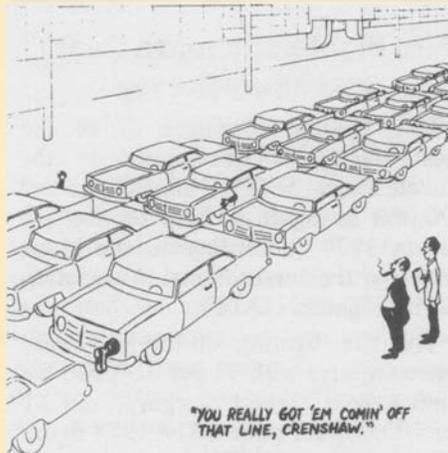
The Hazard Recognition Program is divided into three separate courses: Oc-

cupational Health, Construction Safety, and Industrial Safety. The courses are flexible and designed to accommodate workers' schedules. A certificate is awarded by Ohio State University after completion of any one of the three courses.

For further details about the program or information about enrolling in a course, write the Labor Education and Research Service, Ohio State University, 1810 College Road, Columbus, Ohio 43211.

### BACOSH Launches Newsletter

The Bay Area Committee for Occupational Safety and Health has begun publication of a newsletter entitled "The Risk Factor." The newsletter is published every other month and will contain information about hazards faced by people working in the Bay Area and by which these hazards can be eliminated. The Risk Factor will be running articles on noise, carbon monoxide, state and federal OSHA laws, testing devices, ventilation, and collective bargaining strategy. Annual subscriptions are \$3.00. Mail payment to: BACOSH, P.O. Box 24774, Oakland, CA 94623.



## Paint Remover Ingredient Causes Death

Two researchers at the Medical College of Wisconsin assert that in at least three Milwaukee areas, men died of heart attacks after using paint and varnish removers containing a common ingredient, methylene chloride.

The researchers' report, in the Journal of the American Medical Association, that methylene chloride converts to an excessive concentration of carbon monoxide in the blood, thus robbing the heart of oxygen. They said the Federal Government had done nothing to require adequate warning labels on the products.

*Associated Press*

### KEPONE HEARING (cont'd)

were contested by the co-owners of the small Hopewell, Va. firm.

Among other things, OSHA accused Life Science officials of failing to provide employees with proper protective clothing or a "place of employment which was free from recognized hazards that were causing or were likely to cause death or serious physical harm."

Twenty-eight workers were poisoned by the roach and fire ant killer made at the Life Sciences Products Co. under contract to Allied Chemical, which developed the pesticide in 1951. The workers suffered from such symptoms as tremors, loss of memory, slurred speech, weight loss and liver and brain damage. They have filed a suit against Allied Chemical and other for \$29.1 million dollars damages.

Institute of Industrial Relations,  
University of California  
Center for Labor Research and Education

2521 Channing Way  
Berkeley, CA 94720

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## PLANT OPERATIONS SAFETY CHECK LIST

Fire Suppression Equipment

- |  |     |    |
|--|-----|----|
| 1. Does this facility have a volunteer fire brigade?   | Yes | No |
| 2. Are there regular training sessions being conducted?  | Yes | No |
| 3. All portable fire extinguishers are readily accessible, properly located and show servicing is up-to-date; maximum travel distance for all units not in excess of 75 ft. or 50 ft. in hazardous areas | Yes | No |
| 4. Each extinguisher has been checked for its adaptability to the hazard presented in the immediate area   | Yes | No |
| 5. Clearance of 36 in. maintained between sprinkler deflectors and top of stored material  | Yes | No |
| 6. All fire hoses in proper position and appear to be in good condition  | Yes | No |
| 7. Where manual fire alarm boxes are used, each is accessible from maximum travel distance of 200 ft.; the travel path unencumbered  | Yes | No |
| 8. Where fire control systems are used which are a hazard in themselves, appropriate warnings of such hazard are posted  | Yes | No |
| 9. All potential sources of fire and/or explosion from gases, vapors, fumes, dusts and mists inspected for correctable hazards   | Yes | No |

Electrical Wiring, Apparatus and Equipment

- |  |     |    |
|--|-----|----|
| 1. Clearly illustrated instructions for resuscitation of persons suffering from electrical shock are posted in all electrical stations, switchboards and transformers, entrance restricted to authorized persons | Yes | No |
| 2. Procedures for de-energizing electrical circuits reviewed for effectiveness   | Yes | No |
| 3. Examine extension cords and other temporary wiring for breaks, fraying or other defects   | Yes | No |
| 4. All interior wiring systems have grounded conductors continuously identified throughout the plant's electrical system   | Yes | No |
| 5. Electrical equipment operating between 50 and 600V are protected against accidental contact by an approved cabinet or other enclosure   | Yes | No |
| 6. Insulation mats and protective gear are provided in all areas where more than 150 V to ground are necessarily exposed within eight feet from the floor  | Yes | No |
| 7. Sufficient access and working space is provided and maintained about all electrical equipment for ready and safe operation  | Yes | No |
| 8. Each electrical outlet box is provided with a cover which effectively protects against the hazard from accidental contact   | Yes | No |
| 9. Inspection reveals instructions for disconnection are attached to each electrical motor and appliance   | Yes | No |

## PLANT OPERATIONS SAFETY CHECK LIST

Electrical Wiring, Apparatus and Equipment

- |   |     |    |
|---|-----|----|
| 10. All portable electrical tools are equipped with hand-operated switches which are manually held in the closed position all electrical cables in good condition | Yes | No |
| 11. In locations where dust collects on electric motors causing potential ventilation deficiency, suitable type of enclosed motor is used                         | Yes | No |
| 12. In battery rooms, provision has been made for diffusion of gases to prevent the accumulation of an explosive mixture  | Yes | No |

Industrial Sanitation

- |   |     |    |
|---|-----|----|
| 1. Toilet facilities meet the following standards:  |     |    |
| (a) Separate facilities are provided for each sex   | Yes | No |
| (b) All are within 200 ft. of the work area where practicable   | Yes | No |
| (c) The number of facilities for each conform to standard   | Yes | No |
| (d) Toilet rooms are clean, adequately lighted and ventilated   | Yes | No |
| 2. Dressing rooms, where required, are clean, adequately lighted and equipped with individual clothes facilities  | Yes | No |
| 3. Lavatories are provided in appropriate numbers with hot and cold water, individual hand towels, and are maintained in good repair; lavatory area is clean and well lighted | Yes | No |
| 4. Drinking fountains are installed within 200 ft. of all work areas; they are clean and maintained in good working condition   | Yes | No |
| 5. Outlets for non-potable water are clearly marked to indicate that the water is not for human use and/or consumption  | Yes | No |
| 6. There are no cross-connections, open or potential, between a potable and non-potable water supply  | Yes | No |
| 7. Receptacles for waste are adequate in design and number; they are leak-proof, well maintained and serviced regularly   | Yes | No |
| 8. Adequate control over insects, rodents and vermin  | Yes | No |
| 9. The lunch room is adequate in size, clean, well maintained and physically separated from areas offering the hazard of exposure to toxic materials                          | Yes | No |
| 10. All food is properly stored, refrigerated where appropriate and handled under acceptable sanitary practices   | Yes | No |
| 11. Vending machine areas are maintained in a good sanitary condition   | Yes | No |

Material Handling

- |   |     |    |
|---|-----|----|
| 1. All fiber rope and fiber rope slings used in material handling are in good condition; no evidence of excessive wear or visible defects         | Yes | No |
| 2. All wire rope and wire rope slings are in good condition; no evidence of mechanical damage, bumps, broken strands, or other visible defects    | Yes | No |
| 3. All chain slings, including end fastenings, are in good condition; no evidence of excessive wear or mechanical damage; all are properly stored | Yes | No |
| 4. Each chain bears a current inspection tag  | Yes | No |
| 5. Repairs to chains are made only under qualified supervision; all are proof tested for load under the prescribed standards                      | Yes | No |

## PLANT OPERATIONS SAFETY CHECK LIST

Material Handling (continued)

- |  |     |    |
|--|-----|----|
| 6. All hooks and rings are being tested before being put into service with records of dates and results of such tests  | Yes | No |
| 7. Inspection of all hooks reveals all in good operation; no visible defects   | Yes | No |
| 8. Shackles are in good repair; no visible defects   | Yes | No |
| 9. Cranes and hoists are in good operating condition; regular schedule for servicing maintained; no visible defects, inspection records properly maintained, proper operating procedures are followed                          | Yes | No |
| 10. All industrial trucks are equipped with warning devices; all are equipped with overhead guards   | Yes | No |
| 11. All industrial trucks, other than electrical-powered are re-fueled only in fire-safe areas specifically designated for that purpose  | Yes | No |
| 12. All L P gas-powered industrial trucks are properly stored away from underground entrances or elevator shafts to avoid the hazard of explosion  | Yes | No |
| 13. In refueling operations, all engines are stopped; smoking is prohibited  | Yes | No |
| 14. Where electric batteries are recharged, facilities are provided for flushing and neutralizing spilled electrolyte, for fire protection, and adequate ventilation is provided for dispersal of gas emanating from batteries | Yes | No |
| 15. The load capacity is indicated on each truck and is strictly observed  | Yes | No |
| 16. All conveyor systems in good operating order; no visible defects; adequate clearance from aisles and walkways; stopping devices adequate in number and location  | Yes | No |

Hand and Portable Powered Tools

- |  |     |    |
|--|-----|----|
| 1. All hand and portable power tools are in good operating condition; no defects in wiring; equipped with ground wires                                   | Yes | No |
| 2. All portable equipment is equipped with necessary guarding devices  | Yes | No |
| 3. All compressed air equipment used for cleaning operations is regulated at 30 psi or less; chip guarding and personal protective equipment is provided | Yes | No |

Machine Guarding and Mechanical Safety

- |   |     |    |
|---|-----|----|
| 1. Every production machine has been inspected as to the following items, all found to be in satisfactory operating conditions: |     |    |
| (a) Cleanliness of machine and area   | Yes | No |
| (b) Securely attached to floor  | Yes | No |
| (c) Operations guarded  | Yes | No |
| (d) Illumination  | Yes | No |
| (e) Effective cut-off devices   | Yes | No |
| (f) Noise level   | Yes | No |
| (g) Adjustment  | Yes | No |
| (h) Tripping mechanism  | Yes | No |
| (i) Material flow   | Yes | No |

## PLANT OPERATIONS SAFETY CHECK LIST

Material Hazards

- |   |     |    |
|---|-----|----|
| 1. All hazardous gases, liquids and other materials are properly labeled and stored                                     | Yes | No |
| 2. Areas where hazardous materials are in use are fire-safe and restricted to authorized employes                       | Yes | No |
| 3. Where x-ray is used, the area is properly shielded and dosimeters are used and processed for all authorized employes | Yes | No |
| 4. Protective clothing is worn by employes when oxidizing agents are being used   | Yes | No |
| 5. All hazard areas are posted with NO SMOKING signs  | Yes | No |
| 6. All areas where caustics or corrosives are used have been provided adequately with eye fountains and deluge showers  | Yes | No |

Material Storage

- |   |     |    |
|---|-----|----|
| 1. All material is stored so as not to create either a fire hazard or a safety hazard to personnel          | Yes | No |
| 2. All commodities shall be stored, handled and piled with due regard for their fire hazard characteristics | Yes | No |
| 3. Outside storage of material is maintained at least 15 ft. from an exterior wall                          | Yes | No |
| 4. Outside storage areas are in good condition; weeds and grass under control                               | Yes | No |

Surface Preparation, Finishing and Preservation

- |  |     |    |
|--|-----|----|
| 1. All spray and dip painting areas are properly shielded, adequately ventilated and well-maintained; equipped with non-explosive electrical equipment | Yes | No |
| 2. All dip operations are provided with an automatic fire extinguishing system; adequate first aid supplies and equipment are in immediate area        | Yes | No |
| 3. All spray booths are of adequate construction with a 3 ft. clearance area surrounding each  | Yes | No |
| 4. Face shields and other protective equipment are provided in steam cleaning operations   | Yes | No |
| 5. All abrasive blasting area properly shielded; no evidence of leakage of shot; operators have adequate protective equipment                          | Yes | No |
| 6. All drying equipment is properly controlled, vented and maintained  | Yes | No |

Personal Protective Equipment

- |  |     |    |
|--|-----|----|
| 1. Adequate protective clothing and equipment is required for all hazardous operations | Yes | No |
| 2. All protective clothing and equipment is properly stored for ready use              | Yes | No |

PLANT OPERATIONS SAFETY CHECK LIST

Welding Cutting, Heating and Brazing

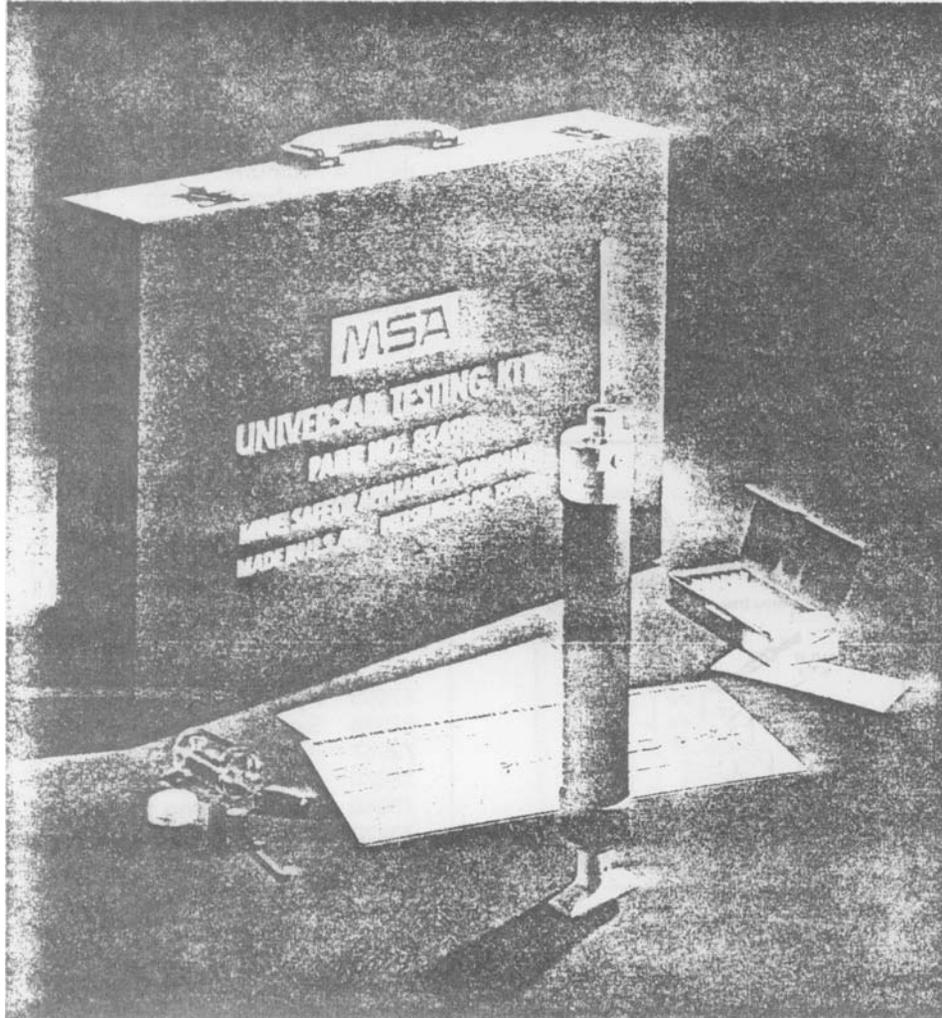
- |  |     |    |
|--|-----|----|
| 1. All compressed gases are stored and used according to standards | Yes | No |
| 2. Welding operations are properly screened                        | Yes | No |
| 3. Fire watchers are designated where required                     | Yes | No |

Medical Facilities and Records

- |   |     |    |
|---|-----|----|
| 1. The dispensary as equipped, the availability of professional or trained personnel, and the maintenance of records conform to corporate minimum standards and are in compliance with OSHA Standards | Yes | No |
|---|-----|----|

## Workplace Monitoring

- I. Initial Evaluation - The walk-through survey
  - A. Purpose
  - B. Methods
  
- II. Workplace Standards
  
- III. Principles of Sampling
  - A. Where
  - B. How long and How often
  - C. When
  
- IV. Instrumentation
  - A. Considerations
    1. Accuracy
    2. Cost
    3. Utility
  - B. Airborne Contaminants
    1. Direct Reading
      - (a) Universal Tester
      - (b) Portable Meters
    2. Requiring Analysis
      - (a) Pump and Accesories - filters, impingers, charcoal tubes, etc.
  - C. Noise
    1. Sound Level Meter
    2. Impact Noise Meter
    3. Dosimeter
  - D. Ventilation
    1. Anemometer
    2. Smoke Tubes
  - E. Heat
    1. Wet Bulb Globe Thermometer
  - F. Radiation
    1. Ionizing
      - (a) Geiger Counter
      - (b) Film Badges and other Dosimeters
    2. Non-ionizing
      - (a) Thermopile
      - (b) Photocell
  - G. Illumination
    1. Light Meters



*Precision 4-orifice turret provides optimum sampling rate for all tests; positive locking device on rotating head accurately aligns pump inlet with selected orifice.*



*Precision 4-position calibrated shaft accurately indexes the intake volume control at 25, 50, 75, or 100 cc; spring-loaded stop locks shaft in desired position.*

## Application

The Universal Tester provides manual sampling of approximately 140 toxic gases, vapors, and mists in the threshold limit ranges, through the use of a variety of glass sampling tubes, filters, and reagent kits. It is used for testing atmospheres for toxic gases in accordance with OSHA procedures. Tubes for testing seven gases have received NIOSH certification (see Approvals and standards below).

## Description

The Tester is a variable-orifice/variable-volume piston-type pump which draws an accurate sample of ambient air through the detector unit. The operator draws the handle of the pump to the preset position which controls volume at four levels (25, 50, 75, or 100 cc) and notes the reaction produced in the sampling tube or other detector unit being exposed. Four different orifice sizes permit selection of the optimum sampling rate for all tests.

The Universal Tester is available in two kit models, complete with steel carrying cases. The Model 1 case is 13" x 10" x 2½" and can hold up to 12 packages of detector tubes or reagent kits. The Model 2 case is 19½" x 13½" x 3¾", which permits more storage capacity for chemicals and supplies. Both kits contain: 1 Universal Tester pump; 1 vial of spare pump parts; 1 instruction card; 1 summary data sheet. Detector tubes and other accessories are packaged and ordered separately. A Summary Data Sheet which accompanies each Universal Tester lists the gases, vapors, and mists which can be tested, the measurable range and TLV, the reagents to use, and accessories required.

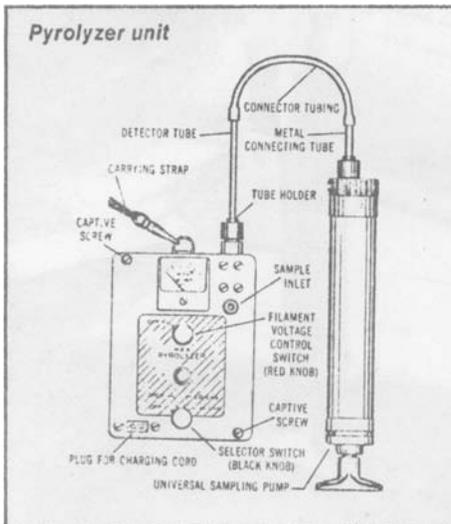
## Accessories and supplies

**Detector tubes:** Glass tubes with break-off tips which fit the orifice of the pump. They are packaged in boxes of 12 and have a minimum two-year shelf life. They indicate the presence of the gas being analyzed by a color change. Tubes are specific to the gas, vapor, or mist listed on the box, such as carbon monoxide, hydrogen sulfide, and others.

**Filter paper and reagent kits:** Consist of chemically impregnated filter paper placed in a special adapter which attaches directly to the Universal Tester pump. Individual ampoules of reagents in plastic syrettes are mixed prior to use, and then applied to the filter paper. Contaminant being tested forms a color spot on the filter which is compared with a standard to determine amount of contaminant present. Used typically for such materials as lead-in-air, chromic acid mist, hydrogen fluoride, arsine, boranes-in-air, and hydrazine.

**Pyrolyzer unit:** Operates with a rechargeable battery, to sample, primarily, the halogenated hydrocarbons compounds in the atmosphere. A sample of the toxic gas is drawn over a heated filament using the Universal Tester pump, then through a detector tube. The liberated halogen produces a stain in the tube proportional to the contaminant concentration.

**Remote sampling kit:** Consists of sampling lines of various lengths with adapters, and are available for testing of toxic atmospheres in hard-to-reach or enclosed areas.



## Approvals and standards

The following tubes have been certified by NIOSH as meeting the requirements of 42 CFR Part 84 when used with the Universal Tester pump:

Part no.	Detector tube	Certification no.
83099	Nitrogen Dioxide	TC-84-040
460103	Ammonia	TC-84-034
85976	Carbon Dioxide	TC-84-025
460058	Hydrogen Sulfide	TC-84-022
91229	Carbon Monoxide	TC-84-015
460225	Chlorine	TC-84-042
92623	Sulfur Dioxide	TC-84-046

Contact your MSA district office for latest approvals on detector tubes and reagents which have been submitted for NIOSH certification.

## Ordering information

### Catalog numbers

- 83500 Universal Tester, Model 1 (small case)
- 83498 Universal Tester, Model 2\* (large case)
- 87505 Pyrolyzer assembly
- 87028 Sample Conditioning Kit
- 73067 Sampling line, 10 ft
- 73068 Sampling line, 25 ft
- 73069 Sampling line, 50 ft
- 20972 Sampling line tubing (specify length)
- 10492 Sampling needle

Note: Detector Tubes and Reagent Kits and Adapters are listed by number on the Summary Data Sheet for the Universal Tester.

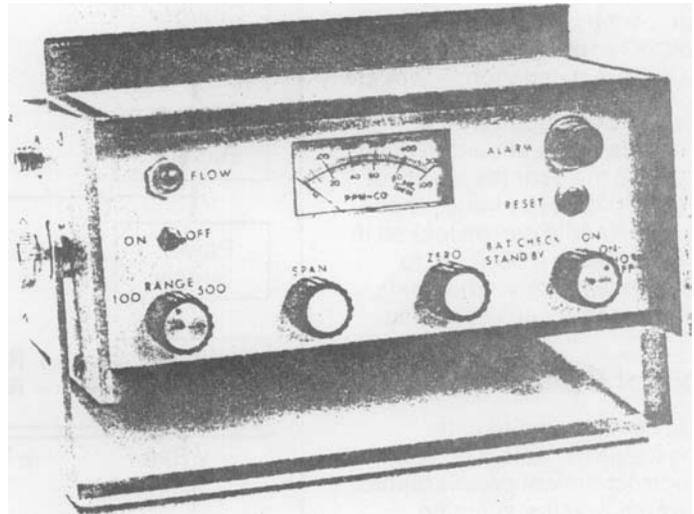
**Note:** This Data Sheet contains only a general description of the Universal Tester. While uses and performance capabilities are described under no circumstances should the product be used except by qualified, trained personnel and not until the instructions, labels, or other literature accompanying it have been carefully read and understood and the precautions therein set forth followed. Only they contain the complete and detailed information concerning this product.



Mine Safety Appliances Company  
400 Penn Center Boulevard  
Pittsburgh, Pennsylvania 15235

At your service: 25 branch offices in the United States;  
MSA CANADA, Downsview, Ontario (Metro Toronto), Halifax,  
Montreal, Winnipeg, Saskatoon, Edmonton, Calgary, Vancouver;  
representatives in principal cities of the world.  
Cable address—"MINSAP" Pittsburgh

# Portable Carbon Monoxide Indicator Model 70



## Application

For on-the-spot measurement of carbon monoxide in air in any location where CO concentrations must be determined as a safety factor. Typically, such areas include gas and utility properties, industrial hygiene areas, garages, bus terminals, sewers, vaults, blast and open hearth furnace areas, flight test centers, and mines. The Indicator warns the user when a pre-determined concentration of carbon monoxide has been reached. A fully charged battery provides more than eight hours of continuous non-alarm operation.

## Description

The MSA Portable Carbon Monoxide Indicator is a completely self-contained, battery-powered instrument capable of measuring CO in the atmosphere in a range of 0 to 100 and 0 to 500 parts per million by volume. The alarm is preset at the factory to trigger at 50 ppm concentration when the low range (0-100 ppm) is used, and 300 ppm on the high range (0-500 ppm). It is also possible to adjust the alarm to other desired levels.

The compact unit weighs 7½ pounds and its aluminum housing is only 8½" wide by 6½" high by 3½" deep. Ease of operation and high performance, combined with accuracy and dependability, provide quick and easy-to-see direct readings of CO concentrations without making adjustments while sampling. Integrated circuits and rugged components are utilized in the unit to provide a tough, weather-resistant instrument.

The Carbon Monoxide Indicator has an alarm warning light on the face panel to provide a visual alarm signal. An alarm signal will energize an audible alarm as well if a CO danger level is indicated. A selector switch allows the audio alarm to be turned off at the user's discretion. The alarm will remain on until the reset button is pushed and the concentration returns to the pre-determined level. (See Block Diagram.)

Calibration and zero adjustments are made with "lift-to-adjust" knobs. An illuminated direct-read meter scale is included on the face panel to facilitate reading in dark areas. A clearly marked selector switch on the panel facilitates range changes. The Model 70 is calibrated for use with a 1 K-ohm input impedance recorder. An internal adjustment pot is provided for use with other recorders. For ease of maintenance, the electrochemical sensor cell and filter are easily removed and replaced.

The Model 70 is powered by an integral rechargeable 2.4-volt Ni-Cad battery pack sealed in a plastic case, which provides 8 to 10 hours of sampling in a fully charged condition. The batteries will discharge in 40 hours with the selector in a **STANDBY** position. An **ON-OFF** master switch is provided to disconnect all circuits when the instrument will not be used for prolonged periods. The battery is recharged simply by plugging one end of the line cord to the instrument and the other end to a 115-volt, 60 Hz, AC outlet. The battery also can be recharged from a 12-volt DC source. An accessory battery charging cable is available, one end of which plugs into the Model 70 unit while the other end is fitted with an automobile lighter plug to permit charging from a DC vehicle battery. The battery becomes fully charged in 16 hours. The charging circuit is designed so that the battery cannot be over-charged, and the Indicator may be used while being charged. A pushbutton on the face panel gives an instant check of battery condition.

It must be noted that only an MSA Charging Cable, PN 449919, should be used when connecting the instrument to a 12-volt DC source. Serious damage will result if a direct connection is made.

The Model 70 is equipped with a carrying handle and a shoulder-waist harness, giving the user the option of carrying the Indicator by hand, or at the waist. The handle can be locked in any position through a 260° arc to provide a base when the indicator is used for semi-continuous sampling.

### Principle of Operation

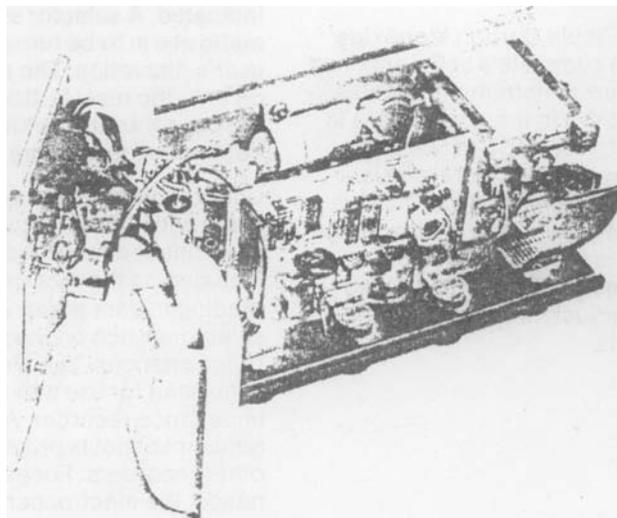
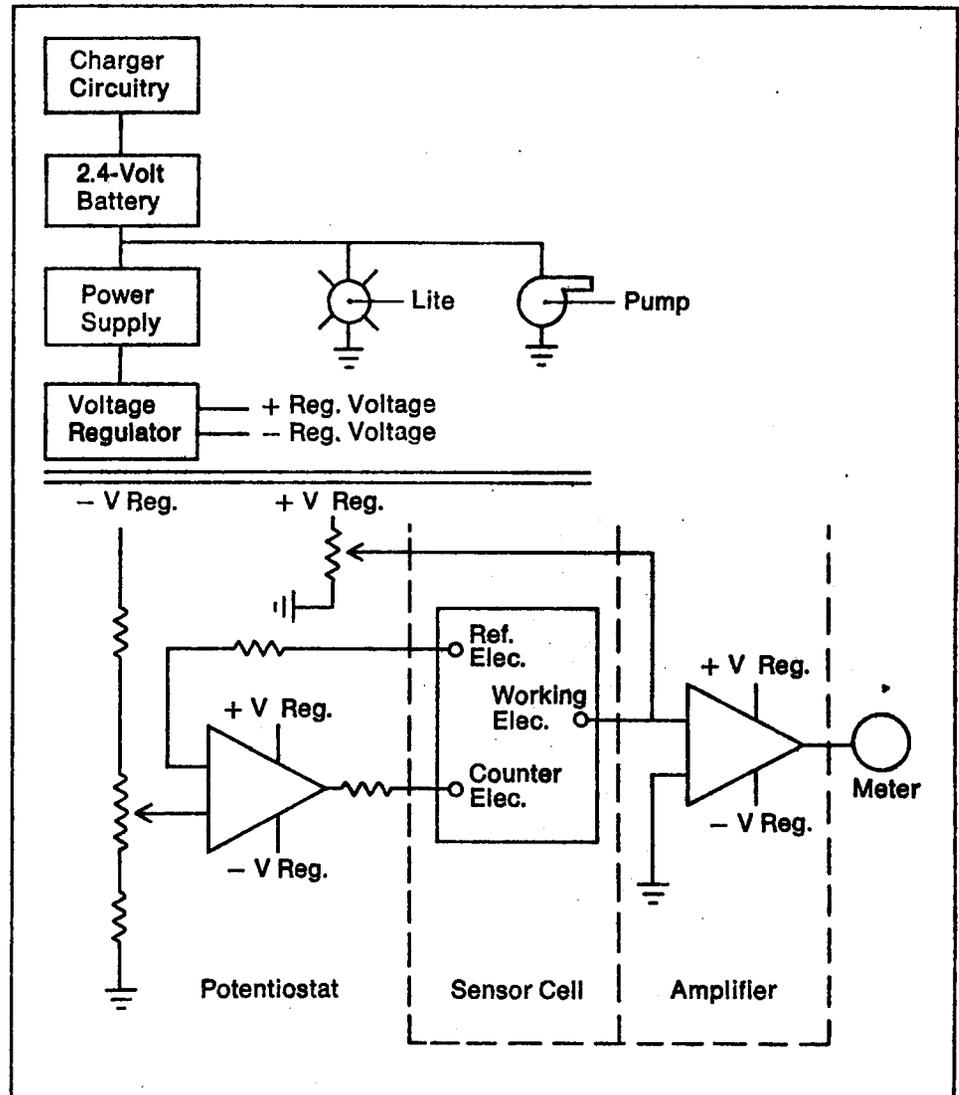
The sensor cell is a sealed unit containing a sulfuric acid electrolyte. It is an electrochemical polarographic type cell which is self-sustaining because it has no consumable electrode. The cell electro-oxidizes CO to CO<sub>2</sub> in proportion to the partial pressure of CO in the sample chamber. The resulting electrical signal is monitored, temperature compensated, and amplified to drive a meter.

A small pump pulls an air sample into the inlet and through the flow indicator. The flow indicator provides a visual reference to insure sample pump operation and sample line integrity. The air sample then is pushed through the interferent filter and into the sensor sample chamber. The sample then exhausts through a port in the sample chamber. The pump and motor assembly of the Model 70 is capable of 750 to 1000 hours of sampling.

The sensor assembly, consisting of a detector cell and a detector pre-amp printed circuit board, is always replaced as a unit to minimize maintenance. The assembly is designed to perform for a minimum of four months.

### Using the Model 70

Operating procedures are simple. All the user needs to do is open the lid of the Indicator and place the instrument in the position it will be used to monitor the air sample. If accessory sample equipment or a humidifier is used, connect the item to the Indicator. Then set the range selector to the desired range.



Observe the meter as the selector switch is turned to **BATTERY CHECK**. The alarm should activate as the needle passes the mid-scale mark. The needle should stop in the battery check zone, or 80 to 100 on the scale.

Turn the selector switch to the **ON** position and press the alarm reset button to silence the alarm. The flow indicator float should be visible at this time. Place a finger momentarily over the sample inlet and observe to make certain the float drops out of sight. This indicates external sample line continuity.

Return the selector switch to **STANDBY** and allow the unit to stabilize for about two minutes. If necessary, adjust the needle to zero by lifting and turning the **ZERO** knob.

Place the selector switch in the **ON-HORN OFF** position. Check the alarm set point by turning the calibration knob to bring the needle slowly to the alarm point. The instrument is factory set to alarm at 50 ppm on the low scale and 300 ppm on the high scale. Adjust calibration knob to return meter to zero.

With the selector switch in the **ON-HORN OFF** position, introduce span calibration gas (a known concentration of CO in air) into the indicator. Adjust meter setting as required. The indicator should now be calibrated.

The Indicator will sample the atmosphere in the **ON** position if an audible alarm is desired, or in the **ON-HORN OFF** position if it is not.

A sample humidifier is supplied with the Model 70 CO Indicator. Its use is recommended when sampling for more than one hour per day and the relative humidity is less than 80%.

A variety of sampling lines and probe rods are available for testing atmospheres in remote locations.

### Limitations

The Model 70 Indicator should be used at the elevation at which it is calibrated. The sensor cell responds to partial pressure of CO in the atmosphere. Changes in atmospheric pressure will cause changes in calibration. The sensor cell is sensitive to flow rate.

Addition of external filters or a sample line will decrease flow rate. Therefore, the instrument should be calibrated with accessories in place.

For areas contaminated with particulate matter an external dust filter, PN 16499, and Filter Housing PN 14273 are available. Certain easily oxidized compounds in the sample atmosphere act as interferences in CO readings. The following table lists interferences and the concentrations equivalent to one ppm carbon monoxide or less:

Methane (CH <sub>4</sub> )	10,000 ppm
Ammonia (NH <sub>3</sub> )	1,000 ppm
Sulfur Dioxide (SO <sub>2</sub> )	500 ppm
Hydrogen (H <sub>2</sub> )	48 ppm
Hydrogen Sulfide (H <sub>2</sub> S)	30 ppm
Nitrogen Dioxide (NO <sub>2</sub> )	12 ppm
Propane (C <sub>3</sub> H <sub>8</sub> )	5 ppm
Nitric Oxide (NO)	3 ppm
Ethylene (C <sub>2</sub> H <sub>4</sub> )	2 ppm
Ethyl Alcohol (C <sub>2</sub> H <sub>5</sub> OH)	2 ppm
Acetylene (C <sub>2</sub> H <sub>2</sub> )	1 ppm

An internal filter included with each sensor assembly minimizes the effects of these compounds. High concentrations of these contaminants may permanently poison the filter. Proper readings are obtained only when the battery has a sufficient level of charge.

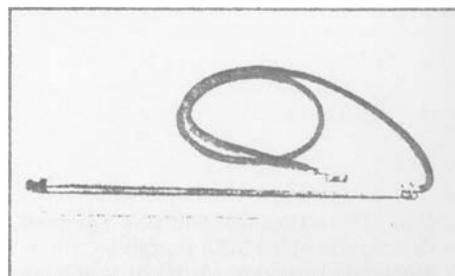
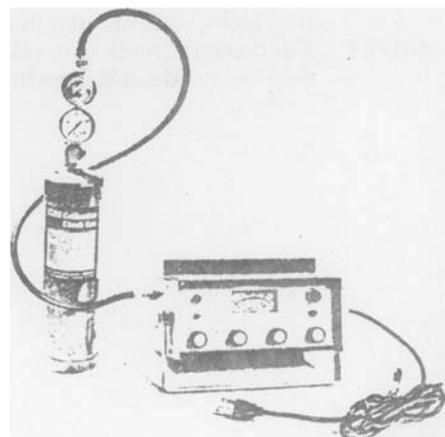
### Characteristics

Ranges	..... 0-100, 0-500 ppm
Accuracy	..... ± 1% full scale
Response	
Time	..... 90% of final reading in less than 30 seconds
Recovery	
Time	..... 90% in less than 60 seconds
Reproducibility	.. ± 1% full scale
Linearity	..... ± 1% full scale
Span and	
Zero Drift	..... Less than 1% full scale/day
Operating	
Humidity	
Range	..... 10-90%
Operating	
Temperature	
Range	..... 0-40 °C
Warm-up	
Time	..... None in the "Standby" Mode
Min. Detectable	
Concentration	... 2 ppm

### Calibration Check, Model 70

The MSA Calibration Check Kit, Model R, provides a quick, convenient and economical method of checking the response of the MSA Portable Carbon Monoxide Indicator, Model 70. Because testing is performed with known concentrations of pressurized gas-in-air, test results are reproducible.

The Check Kit consists of a small, lightweight steel container 10 1/2" high and 2 1/2" in diameter containing approximately 24 liters of a specified gas-in-air mixture; a regulating valve, a hose adapter that connects the cylinder to the instrument. The two-stage regulator includes a gauge to measure container pressure. When not in use, the regulating valve and adapter hose can be easily detached from the expendable cylinder for convenient storage.



## Ordering Information

When ordering Model 70 Portable Carbon Monoxide Indicator, replacement parts or accessories, please use part numbers.

Part Number	Description
461553	Carbon Monoxide Indicator, Model 70
462051	Sensor Assembly, Replacement
461677	Humidifier
461621	Pump Assembly
457754	Carrying Harness
457768	Charging Cable, 115-volt, 60 Hz, AC
449919	Charging Cable, 12-volt, DC
457839	Battery Pack
68223	Lamp

### Calibration Check Kit, Model R

459948	Regulator (1.5 l/m)
449401	Adapter Hose
461768	Calibration Check Gas—Carbon Monoxide, 60 ppm in air
461769	Calibration Check Gas—Carbon Monoxide, 300 ppm in air

## Sampling Accessories for Model 70

11354	5-foot synthetic rubber sampling line, complete with couplings
11955	10-foot synthetic rubber sampling line, complete with couplings
11912	15-foot synthetic rubber sampling line, complete with couplings
11913	25-foot synthetic rubber sampling line, complete with couplings
11957	35-foot synthetic rubber sampling line, complete with couplings
11958	50-foot synthetic rubber sampling line, complete with couplings
11960	Rod, 4-foot solid brass probe
11961	Tube, 3-foot hollow brass probe
73743	Tube, 3-foot plastic probe
14273	External Cartridge Holder
16499	Filter, Cotton, 6 per pkg.

**Note:** This data sheet contains a general description of the MSA Portable Carbon Monoxide Indicator, Model 70. While the data sheet describes uses and performance capabilities of this product, under no circumstances should the unit be used except by qualified, trained personnel, and not until the instruction manual, labels, or other literature accompanying the specific product, have been carefully read and the precautions therein set forth followed. Only they contain the complete and detailed information concerning this product.



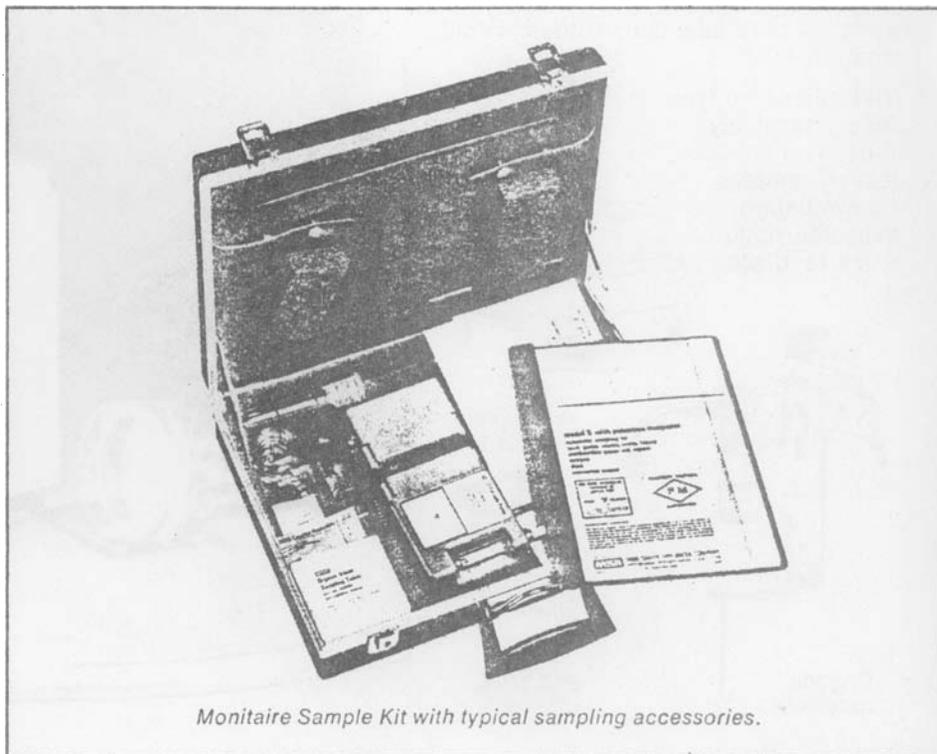
Mine Safety Appliances Company  
400 Penn Center Boulevard  
Pittsburgh, Pennsylvania 15235

At your service: 25 branch offices in the United States;  
MSA CANADA, Downsview, Ontario (Metro Toronto), Halifax,  
Montreal, Winnipeg, Saskatoon, Edmonton, Calgary, Vancouver;  
representatives in principal cities of the world.  
Cable address—"MINSAP" Pittsburgh



Data Sheet  
08-01-01\*

# Model S Monitaire Sampler



Monitaire Sample Kit with typical sampling accessories.

## Application

The Model S Monitaire™ Sampler by MSA provides the necessary vacuum for sampling atmospheres which may contain certain toxic and combustible gases, vapors, dusts, fumes, and mists.

## Description

The Model S Monitaire Sampler is a rechargeable-battery-operated diaphragm pump which supplies a vacuum source for many atmospheric testing devices including filter paper holders, charcoal tubes, impingers, and numerous MSA portable gas detection instruments. Flow rate is adjustable. Pump can be clipped to a worker's belt so that a continuous air sampling can be made over several working hours.

The Model S pump features a dual-valve assembly: a sample valve controls the sample flow directly, and a bypass valve controls bypass air which may enter through the center of the stem.



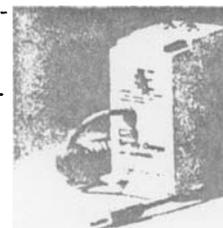
The bypass valve permits the pump to operate efficiently by compensating for sample-flow restrictions. Low sample-flow requirements or highly restrictive sample devices introduce a pressure differential which must be reduced. The bypass valve introduces atmospheric

air directly into the pump, reducing the pressure differential; the bypass may be partially or totally closed at higher sample rates. Proper bypass settings are specified in the instruction materials that are part of the Monitaire Sampler Kit.

A tube fitting on the exhaust side of the pump permits use of the Monitaire Sampler for pressure operations.

The battery charger has two charging rates to charge the Model S pump overnight or over weekends; fully charged battery will run the pump continuously for up to eight hours.

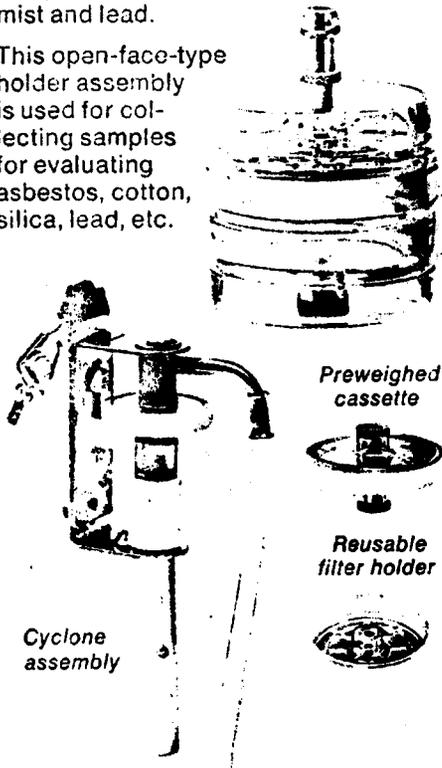
The Model S Monitaire Sampler Kit includes: self-contained battery-operated pump, battery charger, instruction manual, pump maintenance card, and attaché-type carrying case with room for accessories.



## Sampling methods

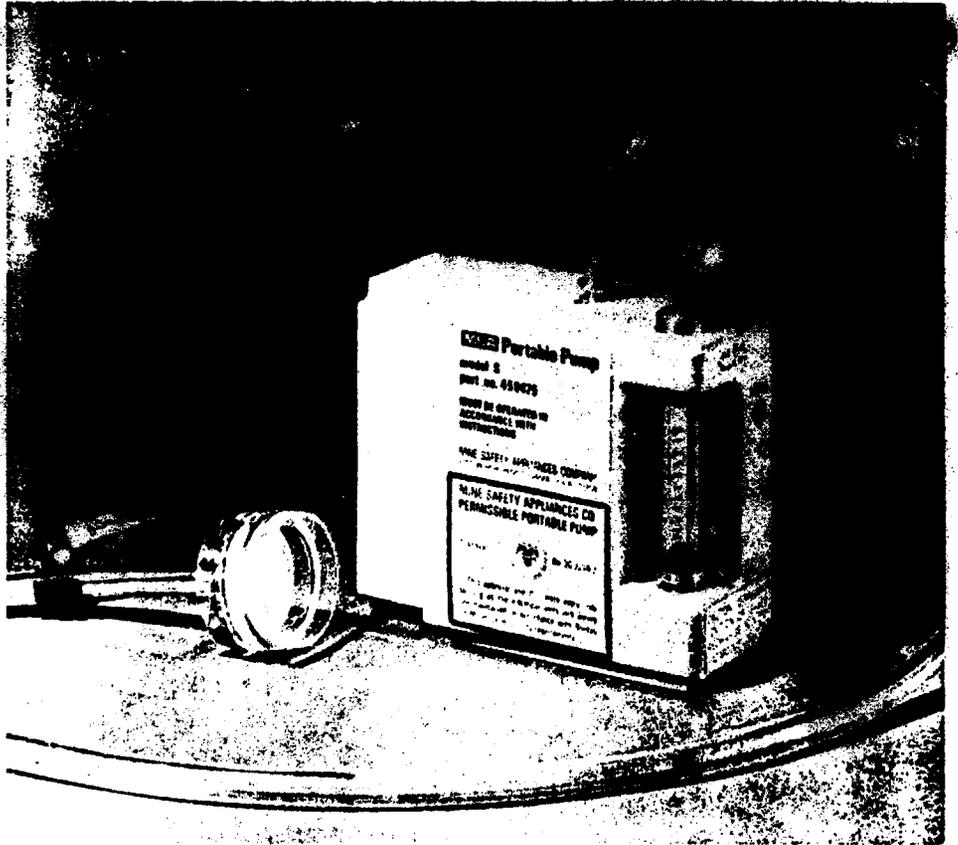
**Dust and mist collection.** Filter paper holders adapt the Model S pump to the collection of dust, fiber, and particulate samples, plus detection of chromic acid mist and lead.

This open-face-type holder assembly is used for collecting samples for evaluating asbestos, cotton, silica, lead, etc.



This respirable dust sampler uses a cyclone and preweighed filter cassette or filter holder to collect only the respirable fractions of a variety of dusts, such as coal and silica.

This holder assembly adapts the Model S pump to chemically detect chromic acid mist and lead dust and fumes. Collection data are given on chart at right.

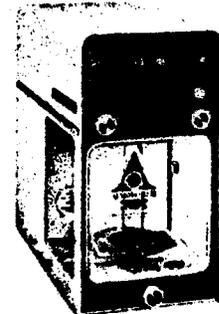


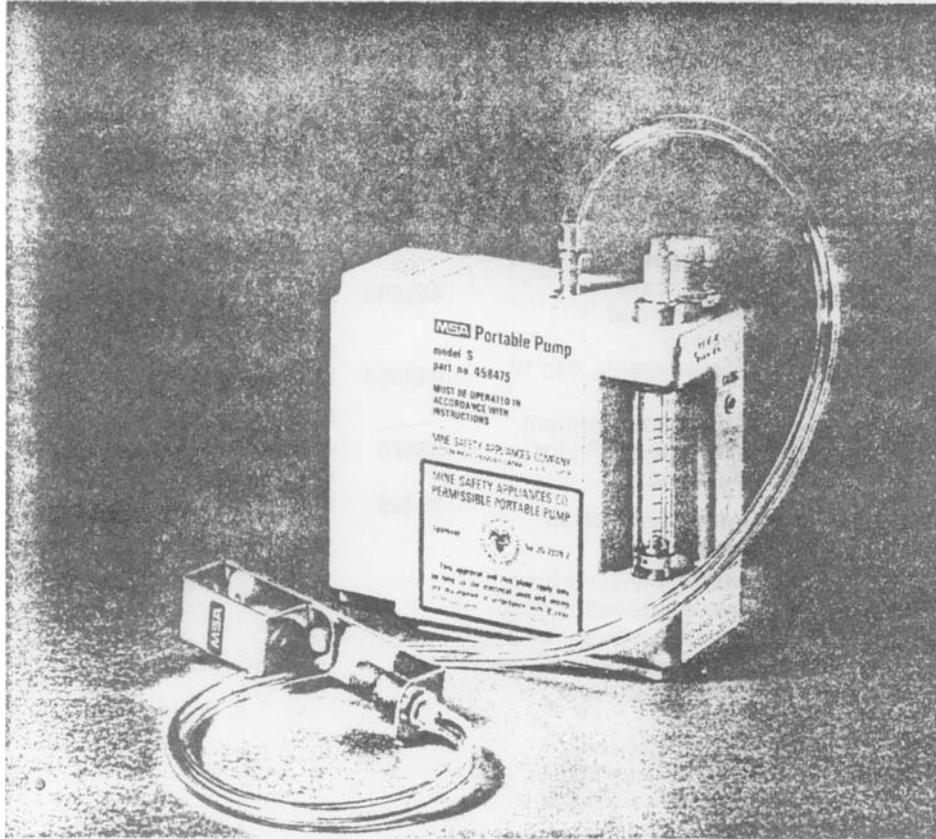
### Sampling data for chromic acid mist and lead dust and fumes

Measured Component	Threshold Limit Value for 1973	Calibration Range	Sampling Time
Chromic acid mist	0.1 mg/M <sup>3</sup>	0.1-2.1 mg/M <sup>3</sup>	1 to 105 minutes
Lead dust and fumes	.15 mg/M	.05-6.3 mg/M <sup>3</sup>	1½ to 48 minutes

### Filter weighing balance

Hazards of dust are often evaluated on a weight basis. A high degree of sensitivity (.01 milligram) is required to relate collected samples to Threshold Limit Values. The Ainsworth Model 22MF Balance from MSA meets these requirements.





**Charcoal sampling tubes.** When used with the Model S Monitaire Sampler and the MSA Tube Holder, MSA Charcoal Sampling Tubes provide for efficient collection of organic and mercury vapors for subsequent analysis using laboratory equipment. Each tube has two separate layers of charcoal: a sample section and a reference section.

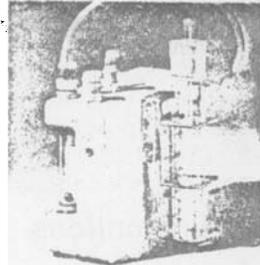
The organic vapor sampling tube will collect any organic compound which is capable of being collected, desorbed, and analyzed; such compounds include benzene, carbon tetrachloride, chloroform, dioxane, ethylene dichloride, trichloroethylene, and xylene. The mercury sampling tube collects both elemental and chemically bound mercury vapors, plus particulates containing mercury.

Noncorrosive stainless-steel tube holder has a positive, leak-free seal; built-in clothing clip attaches to lapel to permit sampling near wearer's inhalation zone.



### Impinger tests

The Monitaire Sampler can be used with MSA Midget Impinger flask assemblies for dust, gas, and vapor sampling. Total airborne particles are wetted down and collected in the impinger flask. Because of the pump design, a 0.1 cfm sampling rate at 12 in. H<sub>2</sub>O vacuum can be obtained. This rate can be maintained for up to eight hours with a fully charged battery.



For sampling toluene diisocyanate (TDI), toluene diisocyanate urea, methylene di-para-phenylene isocyanate (MDI), and polymethylene polyphenylisocyanate (PMPPI) vapors, an all-glass impinger flask is used with the Model S pump.

### Testing with MSA portable gas detection instruments.

The Monitaire Sampler will also provide a continuous vacuum for drawing gas samples through MSA portable detection equipment for testing periods up to eight hours. The test instruments can be placed up to 100 feet from the test location when sampling lines of ¼-inch ID tubing are used.



MSA gas detection instruments that can be used with the Monitaire Sampler include:

- Portable Gas Indicator Model 20
- Portable Gas Indicator Model 21
- Portable Gas Indicator Model 30
- Portable Gas Indicator Model 40
- Explosimeter® Model 2
- Explosimeter Model 2A
- Explosimeter Model 2B
- Explosimeter Model 3
- Explosimeter Model 4
- Explosimeter Model 5
- Explosimeter Navy Type B
- Explosimeter Navy Type E
- Explosimeter AF Navy Type R-1
- Gascope® Model 53
- Portable Oxygen Indicator, 0-25% Range
- Portable Oxygen Indicator, 5-40% Range

## Approvals and standards

Sampling pump has USBM Approval No. 2G-2239-2 as "permissible" for methane/air atmospheres. Factory Mutual approved as "intrinsically safe" for Class I, Division I, Groups C and D hazardous locations.

## Specifications

### Pump

Type: diaphragm

Dimensions: 2½ in. x 5 in. x 5 in.

Weight: 31 oz, including battery

Battery and performance: 6-volt rechargeable battery, 8-hour continuous operation on full battery charge

Flow indication: 0 to 10 scale

Maintenance: (1) valve stems should be cleaned periodically by removing valve and blowing with air; (2) flow-tube assembly is easily removed and replaced; (3) pump and charger should be stored in container when not in use

### Battery charger

Dimensions: 2½ in. x 3 in. x 4½ in.

Weight: 12½ oz

Power source: 110-120 volts, 50-60 Hz

Recharging time: 16-hour rate for overnight charging, 64-hour rate for weekend charging

## Ordering information

### Catalog numbers

#### Model S Monitaire Sampler

459660 Kit, complete with pump, charger, maintenance card, instruction manual, and carrying case  
458475 Pump, Model S  
456059 Battery charger  
996097 Maintenance card  
996338 Instruction manual  
459662 Carrying case  
93385 Flow-tube assembly, 0 to 10 range

459182 Battery pack, replacement  
457629 Calibration check unit for sampling pumps

#### Dust and mist collection accessories

92944 Holder assembly, filter disc  
456243 Holder assembly, respirable dust, complete with cyclone and sampling line assemblies  
456242 Holder assembly only, respirable dust  
456228 Cyclone assembly only  
456226 Sampling line assembly  
456246 Kit, supplementary parts, including:  
1 press/pry tool for 2- or 3-piece aerosol filter holder (456223)  
1 brush (625416)  
1 tweezer (625417)  
3 screens, stainless steel support (456224)  
625412 Holder, aerosol filter, 2-piece; pkg of 12  
449347 Holder, aerosol filter, 3-piece; pkg of 10  
459743 Coupler, sampling line; pkg of 3  
457392 Coupler, stainless steel, for aerosol filter holder sampling with cyclone assembly

457391 Coupler, plastic, for pre-weighed cassette sampling with cyclone holder assembly  
39642 Balance, filter weighing  
39643 Carrying case for balance

#### Charcoal sampling tubes and accessories

459003 MSA Charcoal Sampling Tubes, mercury vapor, pkg of 12  
459004 MSA Charcoal Sampling Tubes, organic vapor, pkg of 12  
459054 MSA Tube Holder

#### Impinger test accessories

93470 Connector assembly for Midget Impinger flask  
93495 Tubing for TDI or MDI flask

**Note:** This Data Sheet contains only a general description of the Model S Monitaire Sampler. While uses and performance capabilities are described, under no circumstances should this device be used until the instructions, labels, or other literature accompanying the product have been carefully read and the precautions therein set forth followed. Only they contain the complete and detailed information concerning this product.



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**SAMPLING DATA SHEET**

**LOCATION:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
\_\_\_\_\_ **Time:** \_\_\_\_\_  
\_\_\_\_\_ **Initial:** \_\_\_\_\_

**Operation:** \_\_\_\_\_  
\_\_\_\_\_

**Description:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Remarks:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Sampling Data**

**Sample #:** \_\_\_\_\_ **Type:** \_\_\_\_\_ **Contaminant:** \_\_\_\_\_ **TLV:** \_\_\_\_\_  
**Pump #:** \_\_\_\_\_ **Rate:** \_\_\_\_\_ **Sample initial weight:** \_\_\_\_\_  
**Time start:** \_\_\_\_\_ **final weight:** \_\_\_\_\_  
**stop:** \_\_\_\_\_ **net weight:** \_\_\_\_\_  
**Sample time:** \_\_\_\_\_

**Calculated Concentration:** \_\_\_\_\_  
**Remarks:** \_\_\_\_\_

Prepared by: John M. Blankenhorn, Industrial Hygienist,  
Division of Training, NIOSH, 1/72.

# DuPont Audio Dosimeter and Readout Unit from MSA



## Description

The DuPont® Audio Dosimeter and Readout Unit from MSA measures and records personal exposure to noise under actual working conditions. The Audio Dosimeter is supplied in a kit complete with battery and five integrating memory cells, or in a convenient Travel Pack (holding twelve dosimeters, a readout unit and accessories). The Readout Unit is a desk-top model to service any number of dosimeters.

### The Audio Dosimeter

The Audio Dosimeter consists of a non-directional microphone connected to the pocket-size dosimeter case by electric cable. The case contains all of the solid-state circuitry; an integrating memory cell which stores all the sound input for evaluating and recording at the end of the work shift; a pushbutton switch connected to a red Light Emitting Diode (LED); a 9-volt battery power source; and an "ON-OFF" switch.

Preliminary circuit checks are made; the dosimeter is then turned "ON" and the case is closed. The dosimeter microphone is clipped to the shirt collar and the case clipped to the belt or worn in the shirt pocket. The worker then performs his normal job functions. Sound picked up by the microphone is fed through the cable into the electronics module where it is attenuated and refined to provide an output equivalent to the RMS "A" weighted, slow response value that would be read on an ANSI S1.4-1971

Type 2 sound level meter. This output is constantly monitored by a 115 dBA detector which trips an electronic "latch" wired to the red LED if the wearer has been exposed to sound above this level. The dBA signal is fed also into a Walsh-Healey weighting section with a specified, sharp dBA cutoff. Audio Dosimeter Model D-100 has a 90 dBA cutoff in accordance with current legislation. Model D-285 has an 85 dBA cutoff to meet requirements of proposed revisions to 29CFR Part 1910.

The output of the Walsh-Healey section of the dosimeter is time-integrated to relate directly to percent of exposure as regards OSHA, and is converted to current flow which is recorded and stored on a noble metal memory cell. At the end of the work period, the cover of the dosimeter case is removed and a check made to determine if the 115 dBA limit was exceeded. This is done by depressing the pushbutton—if the red diode lights, the level was exceeded sometime during the work period. The memory cell is removed and replaced with a "clean" cell. The exposed cell can be read immediately or stored for later readout. This permits the dosimeter to be ready for immediate re-issue.

### The Readout Unit

The Readout Unit displays a percentage reading of Occupational Safety and Health Act permissible sound exposure. For example, a readout of 100 indicates that the total of all of the individual ratios of actual sound exposures to allowable sound exposures is 100% of that permitted within the dBA cutoff range of the dosimeter.

The reading is obtained in a matter of seconds by inserting the memory cell into the socket on the face of the Readout Unit. Turn the unit "ON," then push the "START" lever to retrieve the information stored in the cell. A digital counter will show the actual exposure as a percent of OSHA regulations. As the exposure figure is displayed the memory cell is simultaneously cleaned. It is then removed from the Readout Unit, ready for reuse.

## Application

The Federal Occupational Safety and Health Act of 1970 (OSHA) requires accurate measurement of sound energy reaching the ear as a means of protecting employee hearing. The measurement of employee noise exposure is best done on a cumulative basis, and should be taken over the entire work shift. Currently the Act sets standards of permissible noise exposure to sound levels between 90 dBA to 115 dBA (the proposed revisions will reduce the lower surveillance level to 85 dBA). The Act also stipulates that no employee shall be exposed to continuous sound in excess of 115 dBA at any time. The DuPont Audio Dosimeter and Readout Units from MSA are designed to meet existing or proposed OSHA requirements.

## Specifications

### Audio Dosimeters

The following specifications are for both dosimeter models, except where noted.

Circuitry:	Solid-state
Microphone:	Shure 99A401B Type: Ceramic, non-directional sound level meter microphone Size: 1 5/8" O.D. Cable length: 27" Humidity sensitivity: 95-100% relative humidity at 25°C for 1000 hours without measurable effect on sensitivity
Power:	Battery—9-volt transistor radio battery (NEDA 1604) Battery life: 2 normal work-weeks (ten 8-hour shifts)
Warranty:	90 days—all parts and workmanship
Size:	Length—3.8"; width—2.3"; depth—1.17"
Weight:	8.5 oz.; Microphone 2 oz.; dosimeter 6.5 oz.
Operational check:	Light Emitting Diode
Operating range:	Model D-100—90-115 dBA Model D-285—85-115 dBA
Data collection:	1. OSHA criteria—Integrating memory cell provides % OSHA exposure on separate readout device according to operating range 2. Excess of 115 dBA—Light Emitting Diode in dosimeter
Calibration:	Factory calibrated—acoustically and electronically
System drift:	Less than 0.5 dBA per year
Temperature sensitivity:	0° to 122°F operational range, less than 0.7 dBA error due to temperature at extremes

### Readout Unit

Power supply:	110 volts, 15 watt, 60 cycle (Hz)
Circuitry:	Electronics and electro-mechanical counter
Accuracy:	±1% of criteria
Read rate:	100% exposure in 10 seconds
Display:	Digital—reads in % of criteria
Range:	1% to 3200% of criteria
Reset:	Electric
Size:	5 1/2" x 10" x 10"

## Approvals and Standards

The Audio Dosimeter complies with OSHA, Section 1910.95 (Model D-100 with 90 dBA cutoff) or proposed revisions to 29 CFR Part 1910 (Model D-285 with 85 dBA cutoff).

The dosimeter (both models) is Bureau of Mines approved as permissible for use under Schedule 2G-2531.

The dosimeter (both models) meets accuracy requirements established in ANSI S1.4-1971 Type 2 for general purpose sound level meters. It has an "A" weighting network as prescribed in the standard. This standard has been incorporated into OSHA.

## Maintenance and Calibration

Virtually maintenance-free when used with reasonable care. Memory cells can be reused thousands of times. The unit has been factory calibrated, electronically and acoustically, to a yearly drift of less than 0.5 decible.

## Cautions

Do not turn the dosimeter "OFF" after use until the 115 dBA check has been made. Turning "OFF" before the check erases the 115 dBA indicator.

Do not kink or knot the microphone cable; this could weaken it and cause eventual failure.

Do not attempt to adjust the potentiometers. To do so will only result in inaccurate data.

Do not expose the microphone to excessive moisture or dust.

Do not use the Audio Dosimeter Readout Unit in potentially hazardous locations (as defined in Article 500, National Electric Code).

## Ordering Information

Part No.

### Audio Dosimeter and Readout Unit

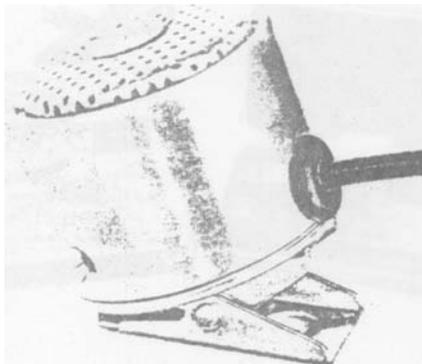
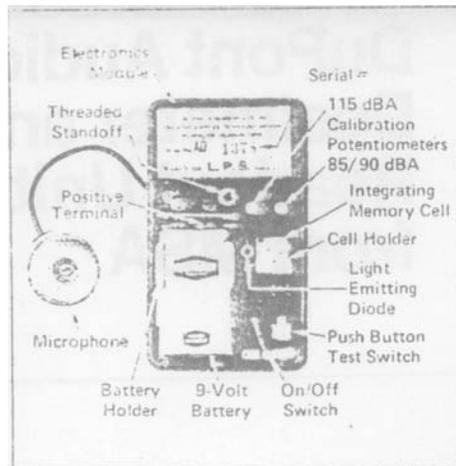
<b>627279</b>	Audio Dosimeter Kit, Model D-100, complete, 90 dBA cutoff
<b>627277</b>	Audio Dosimeter Kit, Model D-285, complete, 85 dBA cutoff
<b>627280</b>	Audio Dosimeter Readout Unit, Model R-150, complete

### Replacement Components

<b>627278</b>	Integrating Memory Cell, package of 5
---------------	---------------------------------------

### Accessories

<b>627282</b>	Carrying case only, Audio Dosimeter
<b>627283</b>	Case only, "Travel Pack"
<b>695017</b>	DuPont Audio Dosimeter Calibrator, Model C-114



(top)  
Interior components of Audio Dosimeter.

(middle)  
Audio Dosimeter non-directional microphone with collar clip.

(bottom)  
Integrating memory cell with convenient customer control number.

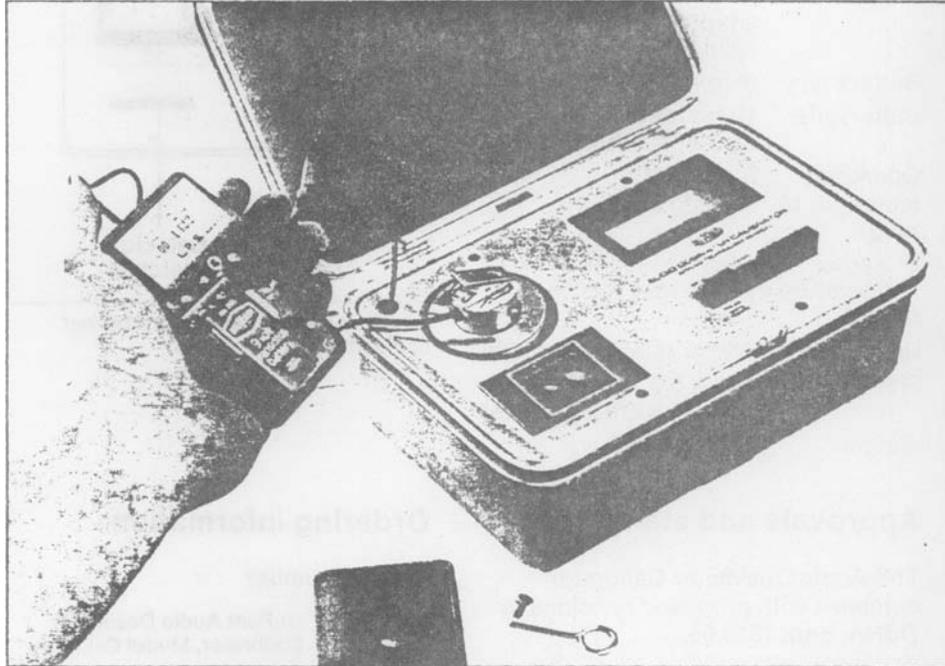
**Note:** This data sheet contains a general description of the DuPont Audio Dosimeter, Model D-100 and Model D-285, and the Readout Unit, Model R-150. While uses and performance capabilities are described, under no circumstances should these products be used until the instruction manuals, or other literature accompanying these products, have been carefully read and the precautions therein set forth followed. Only they contain the complete and detailed information concerning these products.



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# DuPont Audio Dosimeter Calibrator from MSA



## Description

The DuPont\* Audio Dosimeter Calibrator from MSA is designed to confirm accuracy within  $\pm 0.5$  dB, and check the proper operation of DuPont Audio Dosimeters, Models D-100 and 285. It will perform similar functions for sound level meters.

The Audio Dosimeter Calibrator is an instrument package housed in a lid-type box. Opening the lid exposes the instrument face containing a meter, contacts for checking the condition of the Dosimeter battery, a flexible output cable for attachment to the Dosimeter memory cell socket, and an acoustic cavity designed to accept the standard  $1\frac{1}{8}$ " DuPont Dosimeter microphone. The unit is supplied with an adapter for 1-inch ( $\frac{15}{16}$ ") diameter microphones. Adaptors for  $\frac{1}{2}$ " microphones are available. The acoustic cavity provides sound levels of 94 dB and 114 dB at 1 KHz.

\*Trademark of E. I. duPont de Nemours Company

An extension cord permits the acoustic cavity to be removed for checking sound level meters.

All of the circuitry, including the nine-volt battery power supply, is located under the instrument face.

## Operation

Place the microphone in the acoustic cavity.

Connect the output cable to the Dosimeter memory cell socket.

Push the switch for the desired test level.

Push the "ON" button and read output on the meter. To check the other sound level, simply switch to that scale.

The Dosimeter battery can be checked by removing it from its case and touching it to the two test terminals. A reading in the GREEN band on the scale indicates power for an 8-hour operating shift.

The Calibrator's battery power is checked with the switch on the instrument panel.

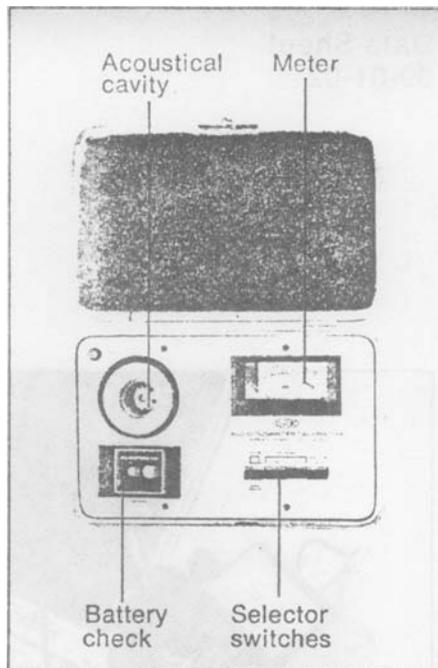
## Application

The Federal Occupational Safety and Health Act of 1970 (OSHA) requires accurate measurement of sound energy reaching the ear where hearing conservation must be instituted. Currently, the Act sets standards for permissible noise exposure to sound levels between 90 dBA and 115 dBA. Proposed revisions may reduce the lower surveillance level to 85 dBA.

The proposed revision to the Act also requires "an acoustical calibrator accurate to within plus or minus one decible shall be used to verify the before and after calibration of the sound measuring instrument on each day noise measurements are taken."

## Specifications

Frequency: 1 KHz  $\pm$  2%  
Output levels: 94.0 dB and 114.0 dB  
Accuracy: Acoustic source,  $\pm$  0.5 dB at atmospheric pressure of 760 mm. Hg. and 23°C (73°F)  
Microphone size: 1 1/8" (2.9 cm) diameter. (Adapter included for 1-inch microphone; 1/2-inch microphone adapter optionally available.)  
Battery type: 9-volt, NEDA 1604  
Battery life: 10-hour continuous, 3 months normal use  
Operating temperature range: 5° to 35°C (41° to 95°F)  
Storage temperature range: -30° to +65°C (-22° to +149°F)  
Humidity: 0-95% relative humidity  
Size: 4.0" x 6.0" x 9.0" (10.2 cm x 15.3 cm x 22.9 cm)  
Weight: 2 lbs. (.9 kg)



*Audio Dosimeter Calibrator external components.*



*Verifying proper operation of a sound level meter.*

## Approvals and standards

The Audio Dosimeter Calibrator complies with proposed revisions to OSHA, Sec. 1910.95.

## Maintenance

Virtually maintenance-free when used with reasonable care.

## Cautions

Do not attempt to adjust the Calibrator. It has been precision-set at the factory.

If malfunction does occur, it should be returned to DuPont for repair.

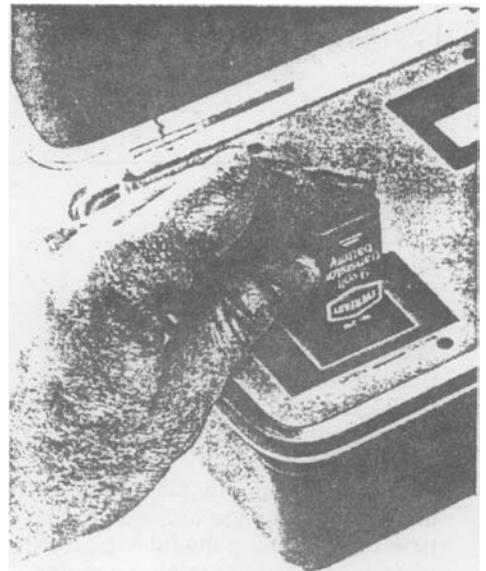
Do not kink or fray cables. When not in use keep the Calibrator in a clean, protected area.

Do not use the Calibrator in potentially hazardous areas as defined in Article 500, National Electrical Code.

## Ordering information

### Catalog number

**695017** DuPont Audio Dosimeter Calibrator, Model C-114



*Check battery condition by touching battery terminals to test terminals on Calibrator.  
If meter reads in green area, battery is good for another 8-hour shift.*

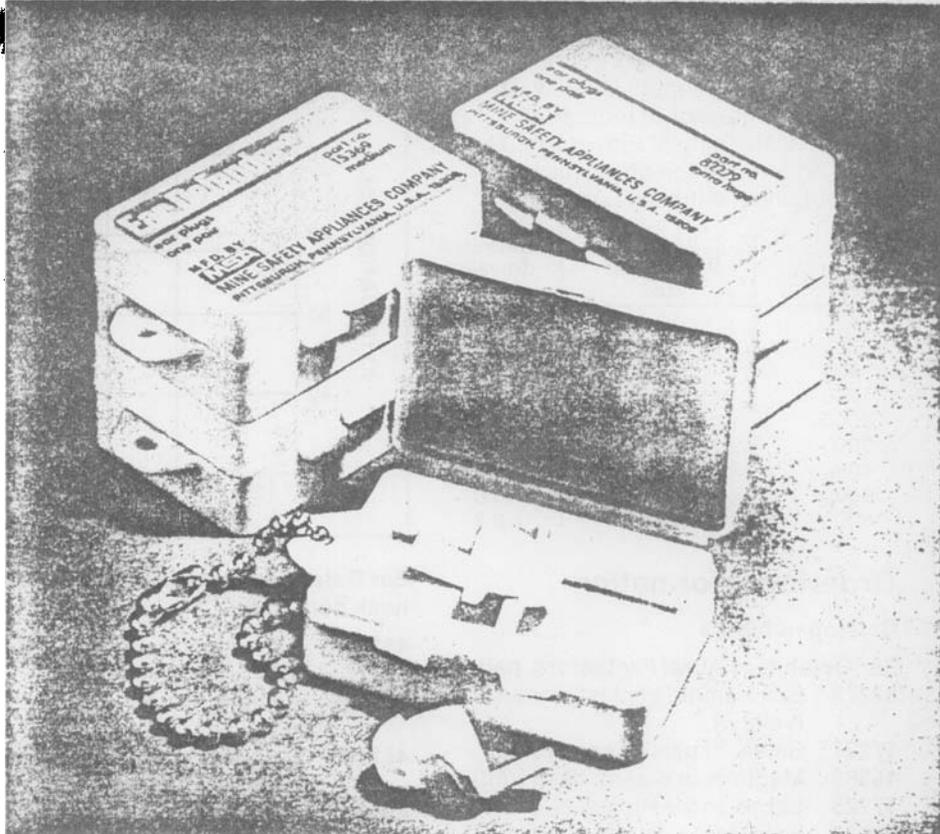
**Note:** This Data Sheet contains a general description of the Dosimeter Calibrator. While uses and performance capabilities are described, under no circumstances should it be used until the instructions, labels, or other literature accompanying it have been carefully read and the precautions therein set forth are understood and followed. Only they contain the complete and detailed information concerning this product.



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# Ear Defenders® Aural Protectors



## Application

Ear Defenders Aural Protectors are insert-type ear plugs for use in noise levels considered harmful to hearing on long exposure, and where ear plugs are preferred over ear muffs.

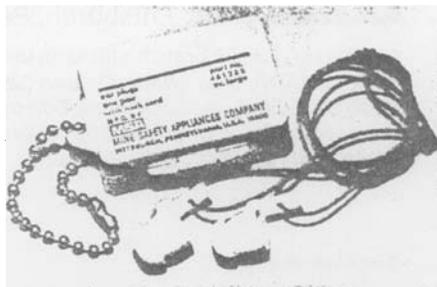
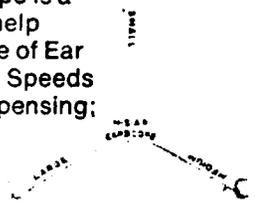
## Description

Ear Defenders plugs, made of a soft elastomeric material, are available in five sizes; size is marked on each plug. These small, featherweight plugs effectively seal the outer quarter of the ear canal. A molded tab permits easy insertion and removal. Plugs clean easily with mild soap and warm water.

Each pair of Ear Defenders is packaged in a small plastic case with a key chain attached to permit fastening to wearer's belt; cases are color coded for size identification.

They also can be supplied with neck cord attached to prevent loss of the protectors.

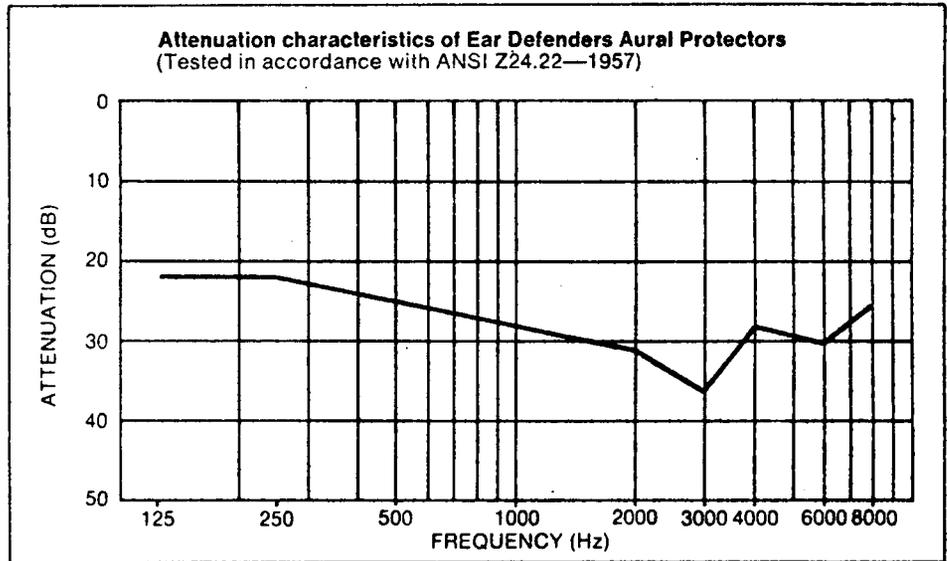
The MSA Earscope is a sizing device to help select proper size of Ear Defenders plugs. Speeds up fitting and dispensing; easily sterilized.



## Performance data

Ear Defenders Aural Protectors have been tested in accordance with ANSI Z24.22-1957 by Kenneth C. Stewart, Associate Professor of Industrial Hygiene, University of Pittsburgh. The following attenuation characteristics were obtained in those tests.

Frequency (Hz)	Mean attenuation (dB)	Standard deviation (dB)
125	22	5.8
250	22	6.9
500	25	7.0
1000	28	6.4
2000	31	6.1
3000	36	4.4
4000	28	6.4
6000	30	6.0
8000	25	8.7



## Ordering information

### Catalog numbers

#### Ear Defenders Aural Protectors, pair

- 82278** Extra small, in plastic case (yellow)
- 17227** Small, in plastic case (blue)
- 15369** Medium, in plastic case (red)
- 17225** Large, in plastic case (green)
- 82279** Extra large, in plastic case (gray)
- 85068** Earscope, 2 per plastic case, with fitting instructions

#### Ear Defenders Aural Protectors with neck cord, pair

- 461284** Extra small, with neck cord; in plastic case (yellow)
- 461285** Small, with neck cord; in plastic case (blue)
- 461286** Medium, with neck cord; in plastic case (red)
- 461287** Large, with neck cord; in plastic case (green)
- 461288** Extra large, with neck cord; in plastic case (gray)

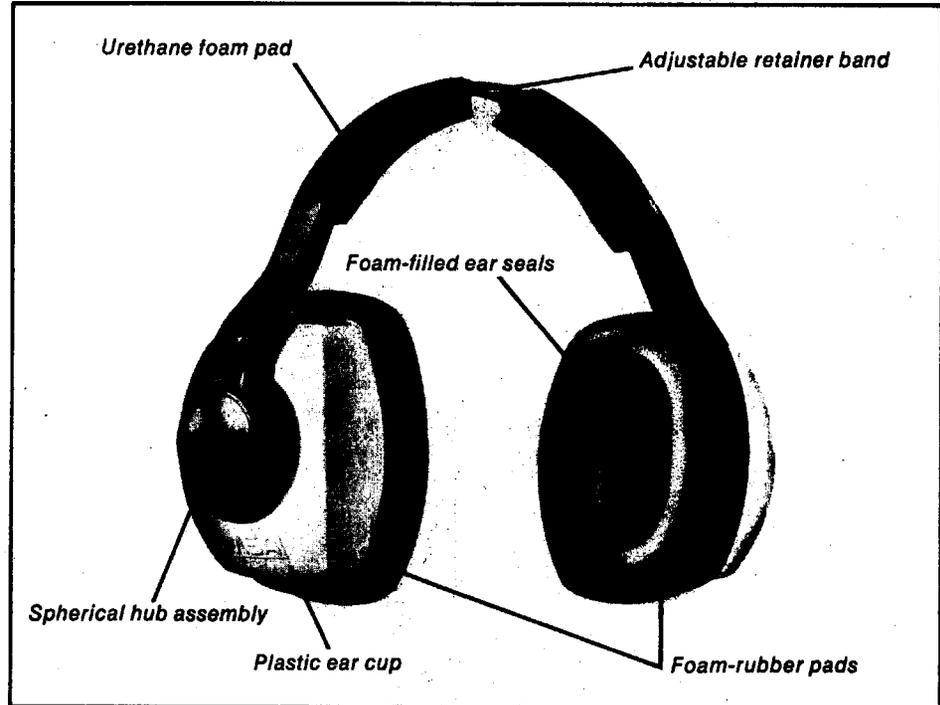
**Note:** This Data Sheet contains only a general description of Ear Defenders Aural Protectors. While uses and performance capabilities are described, only competent medical or technically trained personnel should prescribe the time, place, and method of use. Precautions listed on the labels and cartons must be read, understood, and followed. Only they contain the complete and detailed information concerning this product.



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Cable address—"MINSAF" Pittsburgh

# Noisefoe<sup>®</sup> Mark IV Ear Muffs



## Application

Noisefoe Mark IV Ear Muffs by MSA are designed to reduce the effects of excessive noise found typically in plants, factories, missile launching sites, airports, artillery ranges, and areas where air compressors, jackhammers, and turbines are used.

## Description

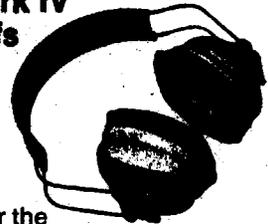
Noisefoe Mark IV Ear Muffs are highly efficient, over-the-ear noise attenuating devices. The low profile and hub/headband design allows the circumaural protectors to be worn over the head, in back of the head, or under the chin; they can be worn alone, or with protective hats, welding helmets, and faceshields. The foam-backed, vinyl-encased steel headband adjusts to individual wearer's head size.

The spherical hub assembly of the headband and ear cups permits adjustment through any plane to conform to wearer's head. Soft vinyl, foam-filled ear seals completely enclose the ears, cushioning and sealing the high-impact Cylolac, plastic ear cups against the wearer's head. Inside the cup is an open-cell urethane foam pad which, with the plastic shell, forms an effective noise barrier.

A support band is available as an accessory to use when the Mark IV headband is worn behind the head or under the chin.

## Noisefoe Mark IV MC Ear Muffs

Noisefoe Mark IV MC Ear Muffs provide exceptional attenuation and can be worn over the head, in back of the head, or under the chin. The two-wire spring-steel suspension has a vinyl cover; ear cups are similar to those used on the Mark IV Ear Muffs. A support-band accessory may be used when the Mark IV MC headband is worn behind the head or under the chin.



## Specifications

### Mark IV muffs

Weight: 9.7 oz  
Head pressure (at 5.6 in.): 42 oz  
Ear opening at flange: 2.75 x 1.6 in.  
Volume of ear cup: 8.9 cu in.

### Mark IV MC muffs

Weight: 10.7 oz  
Head pressure (at 5.6 in.): 57 oz  
Ear opening at flange: 2.75 x 1.6 in.  
Volume of ear cup: 10.5 cu in.

## Approvals and standards

Noisefoe Mark IV and Mark IV MC Ear Muffs have been tested in accordance with ANSI Z24.22-1957, by Dr. Paul L. Michael, Professor of Environmental Acoustics, Pennsylvania State University. Attenuation characteristics shown at right were obtained in those tests.

## Ordering information

### Catalog numbers

#### Noisefoe Mark IV Ear Muffs

- 95635** Noisefoe Mark IV Assembly, complete with foam-filled ear seals
- 453926** Replacement seals, foam filled (pair)
- 453927** Replacement headband cover (pair)
- 453928** Replacement hub assembly, 2 each; hub, adapter, seal, and screws
- 453929** Replacement ear cup (pair)
- 454397** Replacement damping pads (pair)

#### Noisefoe Mark IV MC Ear Muffs

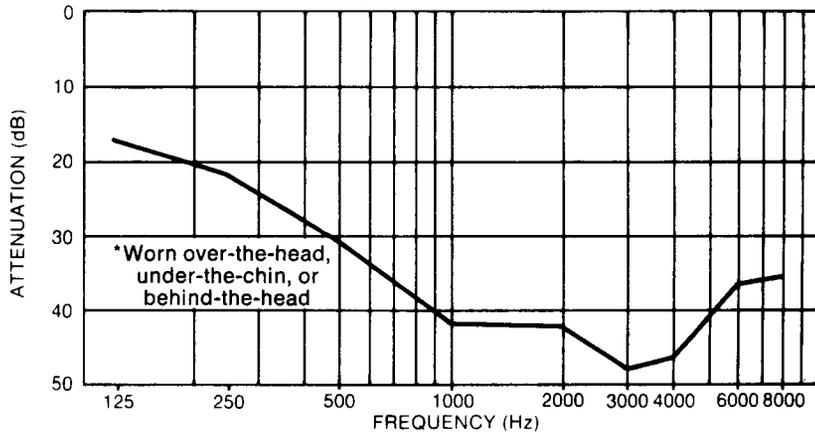
- 459026** Noisefoe Mark IV MC Assembly, complete with foam-filled ear seals
- 453926** Replacement seals, foam filled (pair)
- 460285** Replacement headband assembly; cover, wires, hubs, adapters, seals, pins, and screws
- 460286** Replacement ear cup (pair)
- 454397** Replacement damping pads (pair)

### Accessories

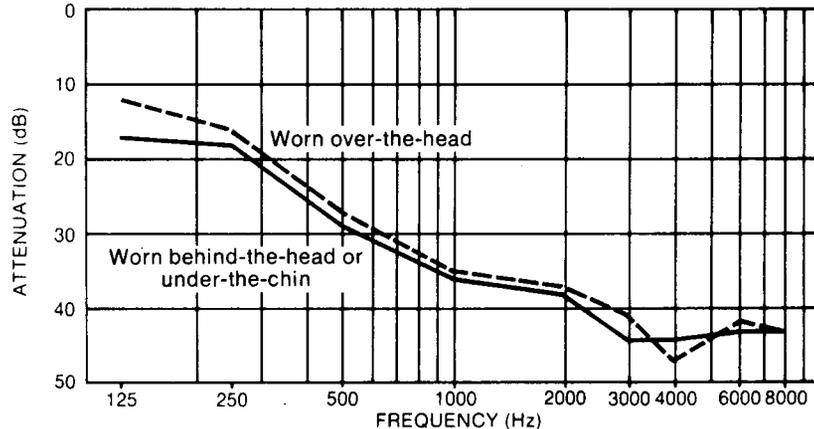
- 455177** Support band for Noisefoe Mark IV and Mark IV MC muffs
- 459000** Cover, cotton slip-on, for seals (pkg of 40)
- 455269** Belt clip

Mean* attenuation characteristics of Mark IV and Mark IV MC Ear Muffs (Tested in accordance with ANSI Z24.22-1957)												
Frequency (Hz)	Worn over the head				Worn behind the head				Worn under the chin			
	Mark IV		Mark IV MC		Mark IV		Mark IV MC		Mark IV		Mark IV MC	
	Mean attenuation (dB)	Standard deviation (dB)										
125	12	2.4	17	3.1	17	2.6	17	4.8	17	2.6	17	3.9
250	16	1.9	21	2.6	18	2.6	21	4.7	18	2.6	22	3.7
500	27	4.2	31	3.5	29	3.1	31	4.2	29	3.1	29	3.2
1000	35	2.0	45	4.8	36	3.2	41	6.6	36	3.2	39	4.8
1000	37	3.7	42	6.4	38	4.1	40	5.6	38	4.1	41	6.6
3000	41	4.5	48	6.1	44	7.2	44	6.0	44	7.2	47	7.2
4000	47	5.3	45	7.4	44	4.6	44	7.4	44	4.6	48	6.9
6000	42	5.0	36	6.2	43	4.7	34	6.1	43	4.7	37	7.1
8000	43	6.7	35	8.0	43	5.7	33	10.2	43	5.7	37	7.7

Mean\* attenuation characteristics of Noisefoe Mark IV MC Ear Muffs (tested in accordance with ANSI Z24.22-1957)



Mean attenuation characteristics of Noisefoe Mark IV Ear Muffs (tested in accordance with ANSI Z24.22-1957)



**Note:** This Data Sheet contains only a general description of Noisefoe Mark IV and Mark IV MC Ear Muffs. While uses and performance capabilities are described, only competent medical or technically trained personnel should prescribe the time, place and method of use. Precautions listed on the labels and cartons must be read, understood, and followed. Only they contain the complete and detailed information concerning these products.



Mine Safety Appliances Company  
400 Penn Center Boulevard  
Pittsburgh, Pennsylvania 15235

At your service: 25 branch offices in the United States;  
MSA CANADA, Downsview, Ontario (Metro Toronto), Halifax,  
Montreal, Winnipeg, Saskatoon, Edmonton, Calgary, Vancouver;  
representatives in principal cities of the world.  
Cable address—"MINSAP" Pittsburgh

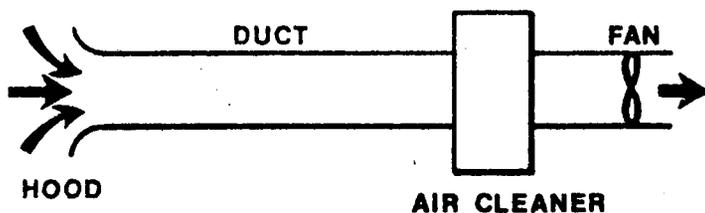
NOISE SURVEY

Location \_\_\_\_\_ Date \_\_\_\_\_  
\_\_\_\_\_ Meter # \_\_\_\_\_  
Operator \_\_\_\_\_ Calibrator # \_\_\_\_\_  
\_\_\_\_\_ Calibration \_\_\_\_\_

Sketch of Survey Area with Readings and Notes:

Time of Day \_\_\_\_\_ Post Survey Calibration: \_\_\_\_\_  
Recommendations: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## VENTILATION MEASURING INSTRUMENTS



$$TP = SP + VP$$

$$Q = VA$$

Pitot tubes

Manometers

U-tube

Inclined

Inclined-vertical

Pitot traverse

Swing Vane Anemometer

Alnor 6000 Velometer

Alnor Velometer Jr.

Dwyer Air Meter

Thermal Anemometer

Magnehelic gage

Rotating Vane Anemometer

Smoke tube

Testing systems

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Prepared by John M. Yacher, Chemical Engineer, Division of Training, NIOSH.

### VELOMETER APPLICATIONS

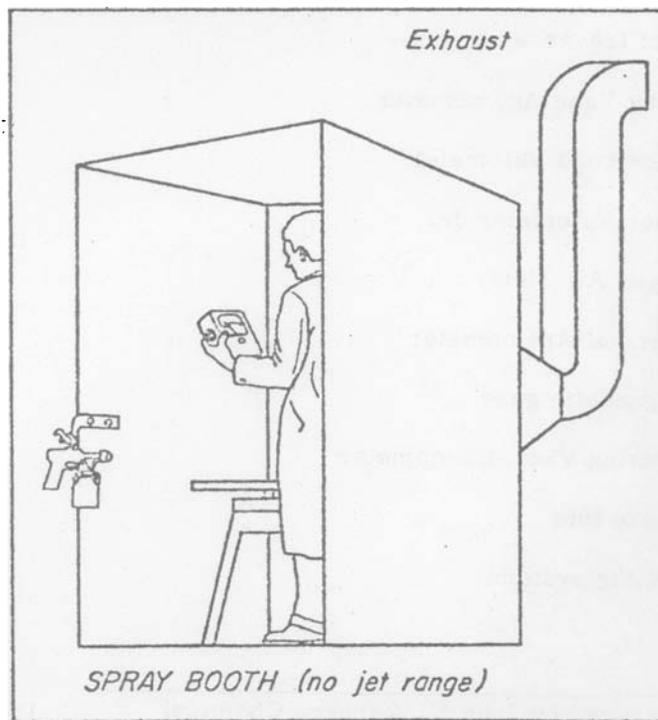
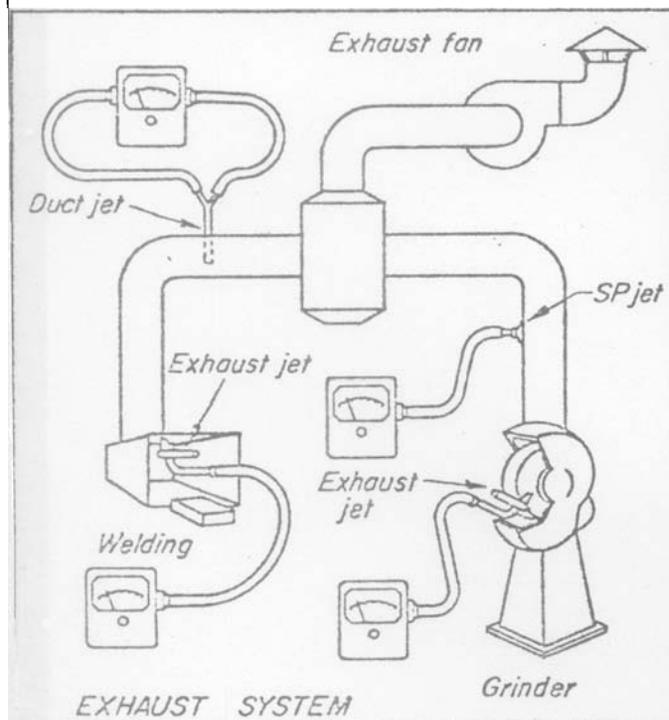
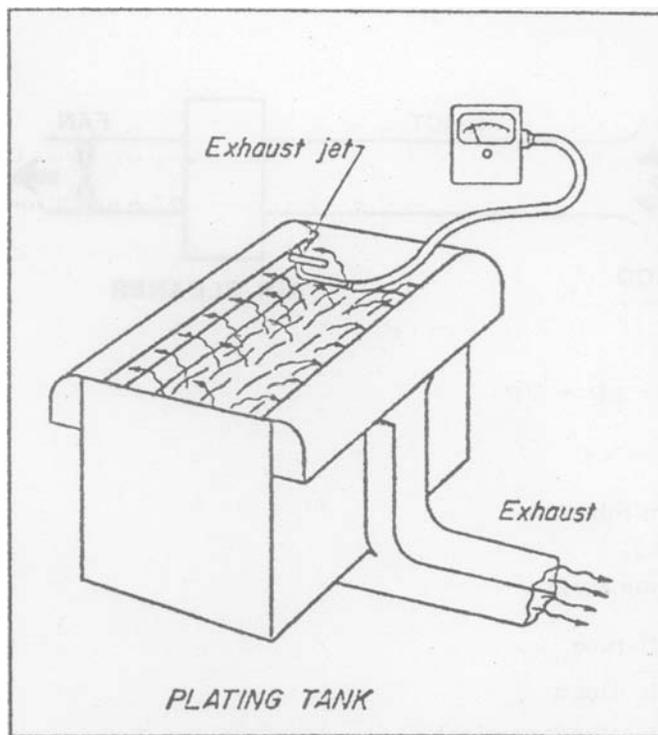
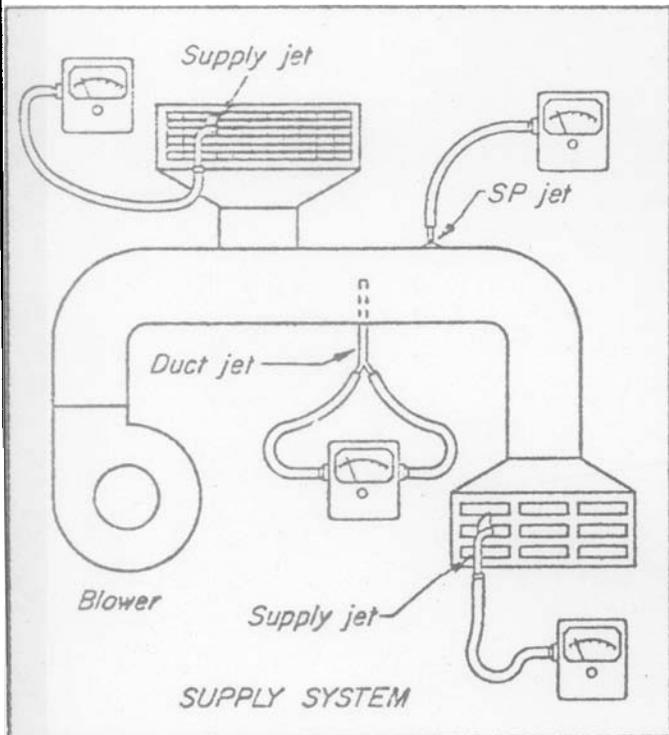


Figure 9-7

## HEAT Stress

Need to know Wet Bulb Globe Temperature Index (WBGT), Work Load and approximation of air speed.

$$\text{WBGT} = 0.7(T_{\text{nw}}) + 0.2(T_g) + 0.1(T_a) \quad \text{outdoors, sunlit}$$

$$\text{WBGT} = 0.7(T_{\text{nw}}) + 0.3(T_g) \quad \text{indoors, or outside no sun}$$

where:  $T_{\text{nw}}$  = Natural Wet Bulb Temperature

$T_g$  = Vernon Globe Temperature

$T_a$  = Dry Bulb Temperature

Natural Wet Bulb: mercury in glass thermometer, range of 30-120 F. bottom covered with absorbant cotton wick. 1 inch exposed to air between top of resevoir and bottom of bulb.(1 F gradations)

Vernon Globe: 6" diameter thin copper sphere painted flat black. Mercury in glass thermometer, 30 - 220 F range inserted with bulb in middle of sphere.(2 F gradations)

Dry Bulb: Mercury in glass thermometer of suitable range.

Thermal exposure based on hottest 2 hour period of work shift in which regular work is performed.

$$\text{Av. WBGT} = \frac{(\text{WBGT}_1) \times t_1 + (\text{WBGT}_2) \times t_2 + \dots + (\text{WBGT}_n) \times t_n}{120 \text{ Minutes}}$$

120 Minutes

WBGT measured during rest and work periods during 2 hours and (t) is duration of respective interval in minutes.

2. Determine Work Load:  $WL_1 \times (t_1) + WL_2 \times (t_2) + \dots + WL_n \times (t_n)$

120 Minutes

Work Load----- resting 100 kcal/hr or 400 BTU  
 light 150 kcal/hr or 600 BTU  
 moderate 250 kcal/hr. or 1,000 BTU  
 heavy 350 kcal/hr or 1,400 BTU

Table 2c gives examples of jobs of various work loads.

TABLE II  
Some Selected Types of Work  
Classed According to Workload Level\*

Work Level	Energy Expenditure Range
Level 1—Resting	100 kcal/hr or less
Level 2—Light <i>Sitting at ease; light hand work (writing, typing, drafting, sewing, bookkeeping); hand and arm work (small bench tools, inspecting, assembly, or sorting of light materials); arm and leg work (driving car under average conditions, operating foot switch or pedal). Standing: drill press (small parts); milling machine (small parts); coil taping; small armature winding; machining with light power tools; casual walking (up to two mph).</i>	101 to 200 kcal/hr
Level 3—Moderate <i>Hand and arm work (nailing, filing); arm and leg work (off-road operation of trucks, tractors, or construction equipment); arm and truck work (air hammer operation, tractor assembly, plastering, intermittent handling of moderately heavy materials, weeding, hoeing, picking fruits or vegetables); pushing or pulling lightweight carts or wheel barrows; walking two to three mph.</i>	201 to 300 kcal/hr
Level 4—Heavy <i>Heavy arm and truck work; transferring heavy materials; shoveling; sledge hammer work; sawing, planing, or chiseling hardwood; hand mowing, digging, ax work; climbing stairs or ramps; jogging, running, walking faster than four mph; pushing or pulling heavily loaded hand carts or wheel barrows; chipping castings; concrete block laying.</i>	Above 301 kcal/hr

Determine Air Speed: Use velpmeter if possible, if not, approximate-Marked air motion(ex. in path of industrial person cooling fan) is considered high velocity. Less than this(less than 300 fpm) is low.

When you have Average WBGT, Average Work Load and Air Speed use Table 1 to see if value exceeds OSHA's Advisory Committee Recommendations on Heat Stress.

TABLE I  
Threshold WBGT Values

Work Load	Threshold WBGT Values Degrees F	
	Low Air Velocity (Up to 300 fpm)	High Air Velocity (300 fpm or above)
Light (Level 2) (200 kcal/hr or below)	86	90
Moderate (Level 3) (201 to 300 kcal/hr)	82	87
Heavy (Level 4) (Above 300 kcal/hr)	79	84

June 1975, NATIONAL SAFETY NEWS

"I have seen three-hundred-watt electric bulbs in the plant that I worked where the ceiling was high, and they looked like they were red and not much more than a twenty-five-watt bulb...You could get over by the window where the sun was shining through and the dust particles were so thick when you looked into that sunshine that it looked like you could just reach out and grab a handful of it."

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General ventilation may make the air more comfortable. It will not make it any safer if toxic dust, fumes, or gases are present. No general ventilation system can keep you from breathing contaminated air. Floor fans, which just push the air around, are even worse.

## LOCAL EXHAUST VENTILATION

Local exhaust ventilation is designed to remove toxic dust, fumes, and gases at the point where they are generated. A local exhaust system consists of a hood close to the work to suck in the contaminated air, ducts to carry it away, a fan, and an air-cleaning device to purify the air before it is vented to the outside.

### Hoods

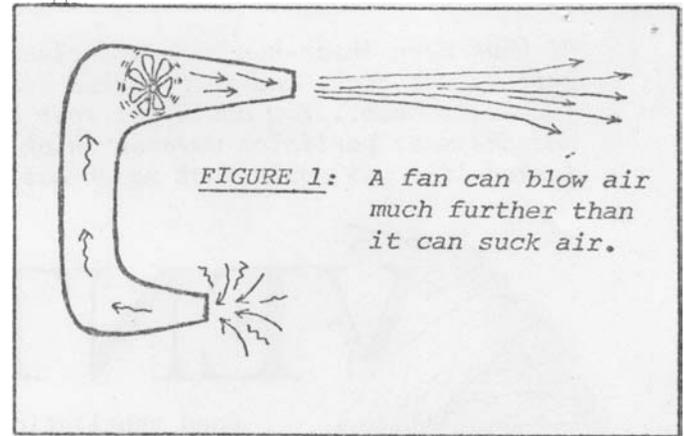
No ventilation system can succeed unless the toxic dust, fumes, or gases are drawn into it. It is the hood that captures the contaminants. The design of the hood is critical to the effectiveness of the ventilation.

Different processes require different hoods. A circular guard enclosing a grinding wheel can double as a hood if it is properly designed and connected to a duct. Slot hoods are effective on plating and pickling tanks. Welding can be done on cross-draft tables. Flexible clip-on hoses can be used with rock drills and other portable tools. Hoods vary widely, depending on the process and the hazard it generates, but a few basic principles apply to all of them:

- The hood should be located as close as possible to the source of the contaminant. The reach of a hood, the distance over which it can pull in air, is very short. (By contrast, if air were to be blown out of the same hood, it would travel much further. This is because when air is sucked into an opening it comes from all directions. When it is blown out it goes in one direction only. See Figure 1.)

Contrary to popular opinion, the gases, fumes, mists, and dusts you might breathe in do not rapidly sink to the floor or rise to the ceiling. Putting a hood on the floor or a fan in the roof is useless for protecting your health.

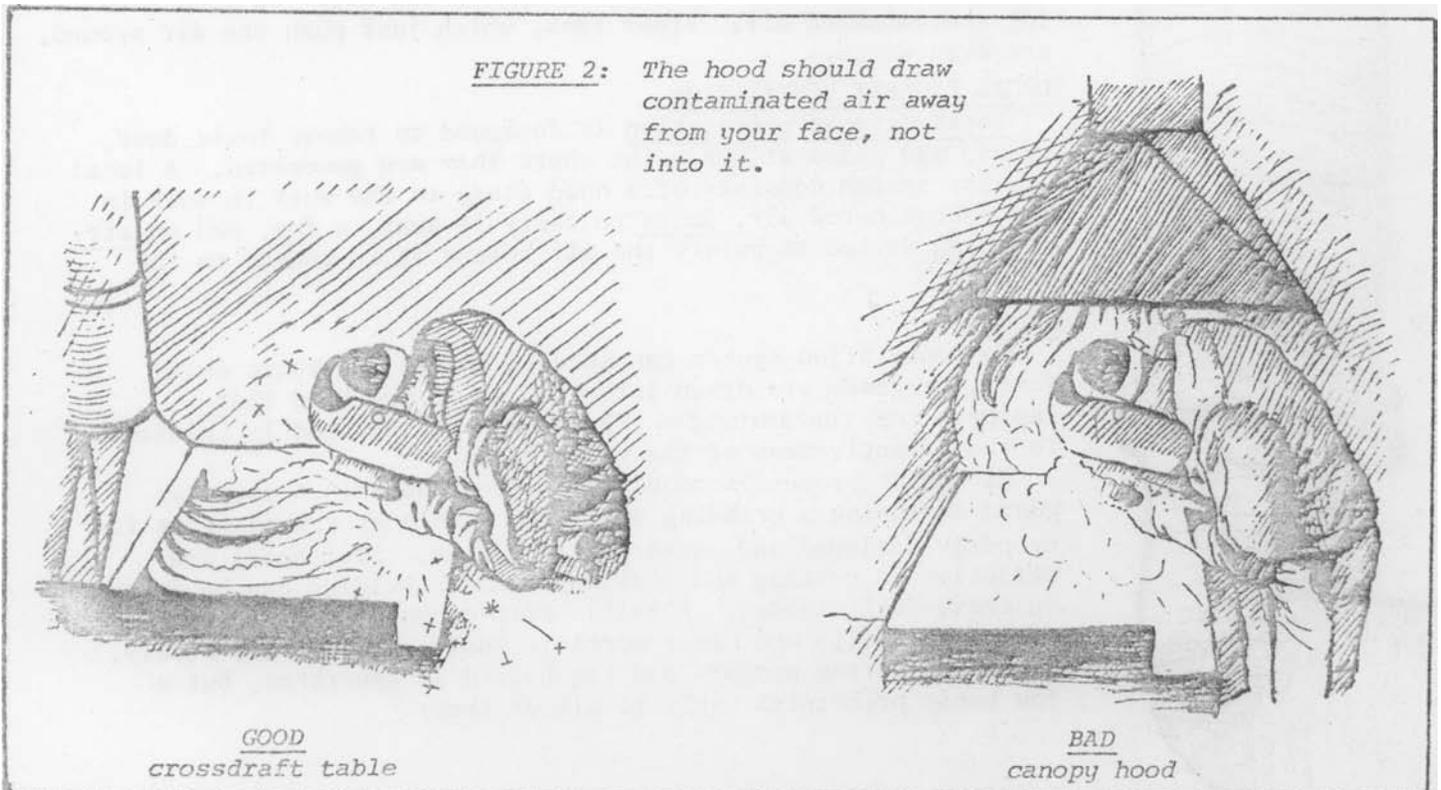
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- The hood should draw contaminated air away from your face, not into it. (See Figure 2.)
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speed of the air at the point at which the contaminant is released necessary to capture it and draw it into the hood. Different processes require different control velocities. (See Table 1.) Simple instruments for measuring air velocity are available. For more information, contact Survival Kit.

- Make-up air should be provided. The system will not be efficient unless fresh air is blown into the room to replace the air sucked out by the hoods. Management often neglects to provide make-up air, especially in the winter when they might have to heat it. Make sure you have a fresh air system, and that it operates year-round.

FIGURE 2: The hood should draw contaminated air away from your face, not into it.



### Ducts

Ducts carry contaminated air away from the work area. They should be corrosion resistant and free from holes and leaks.

Keep the air flowing smoothly, ducts should be round, with as few bends as possible. The system must be carefully redesigned each time new hoods or ducts are added. Otherwise it may not have enough capacity, or it may be out of balance - some hoods may generate a heavy air flow and some may generate none at all. Ducts should be cleaned and inspected regularly. Clogged ducts restrict the air flow and are a fire hazard if they carry flammable dust.

### Fans

The fan moves the air. It must be powerful enough to do the job. Many fans are inadequate, especially in systems that have expanded over the years.

Some fans are too noisy. You should not have to trade your hearing for the right to breathe clean air. Large, relatively slow fans can move as much air as small, high-speed ones, but with much less noise. The noise can be cut further by putting the fan on rubber mountings.

### Air Cleaners

The company should not be allowed to

pollute the neighborhood around the plant. An appropriate filter, precipitator, scrubber, settling chamber, or some other air-cleaning device should be part of the ventilation system. It should be cleaned and inspected regularly.

### WHAT YOU CAN DO

Since ventilation contributes nothing to production, management usually fails to maintain it, or they turn it off altogether to save fuel costs. Insist on proper maintenance. Insist that the ventilation operate whenever you need it.

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Table adapted from Work is Dangerous to Your Health, by Stellman & Daum; and from Industrial Ventilation: A Manual of Recommended Practice, by the American Conference of Governmental Industrial Hygienists.

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Smoke-tubes, which generate a highly visible and safe smoke are available from suppliers of safety equipment. Also available are velometers and anemometers, which measure the air flow. For more information, contact Survival Kit.

#### If the System Breaks Down

If the ventilation is not working properly, there are several things you can check:

- Have new hoods or ducts been added without balancing the system or increasing the capacity of the fan and air-cleaner?
- Are the ducts or air-cleaner clogged?
- Does the system leak?
- Has the production process been changed without changing the ventilation?
- Is the system running at full capacity? Or has management cut it back to save money?
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- Is the fan in backwards? Many systems use centrifugal fans. If you put one in backwards it will still work, but at half capacity. Careless plant engineers sometimes make this mistake.

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The OSHA General Industry, Maritime, and Construction standards give the legal requirements for ventilation systems. Available from the nearest OSHA office.

This factsheet was prepared by the Occupational Health and Safety Project of Urban Planning Aid. We also publish Survival Kit. For more information, write us at 639 Massachusetts Ave., Cambridge, MA 02139 or call (617) 661-9220.



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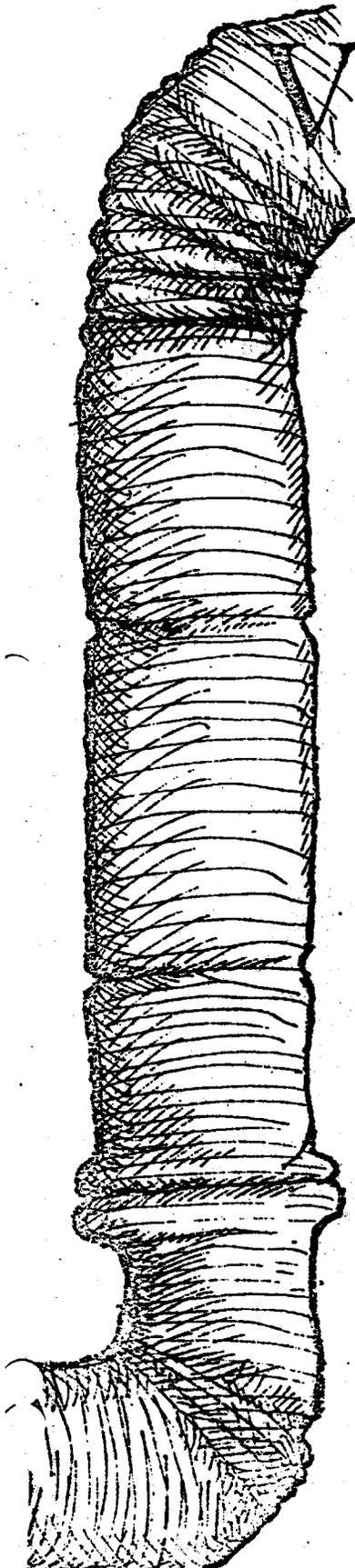
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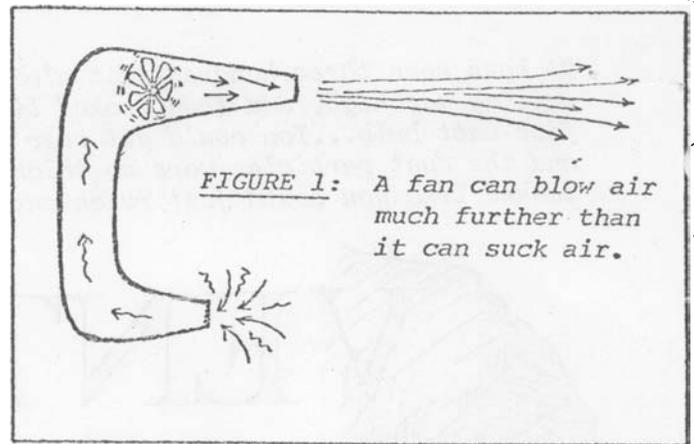
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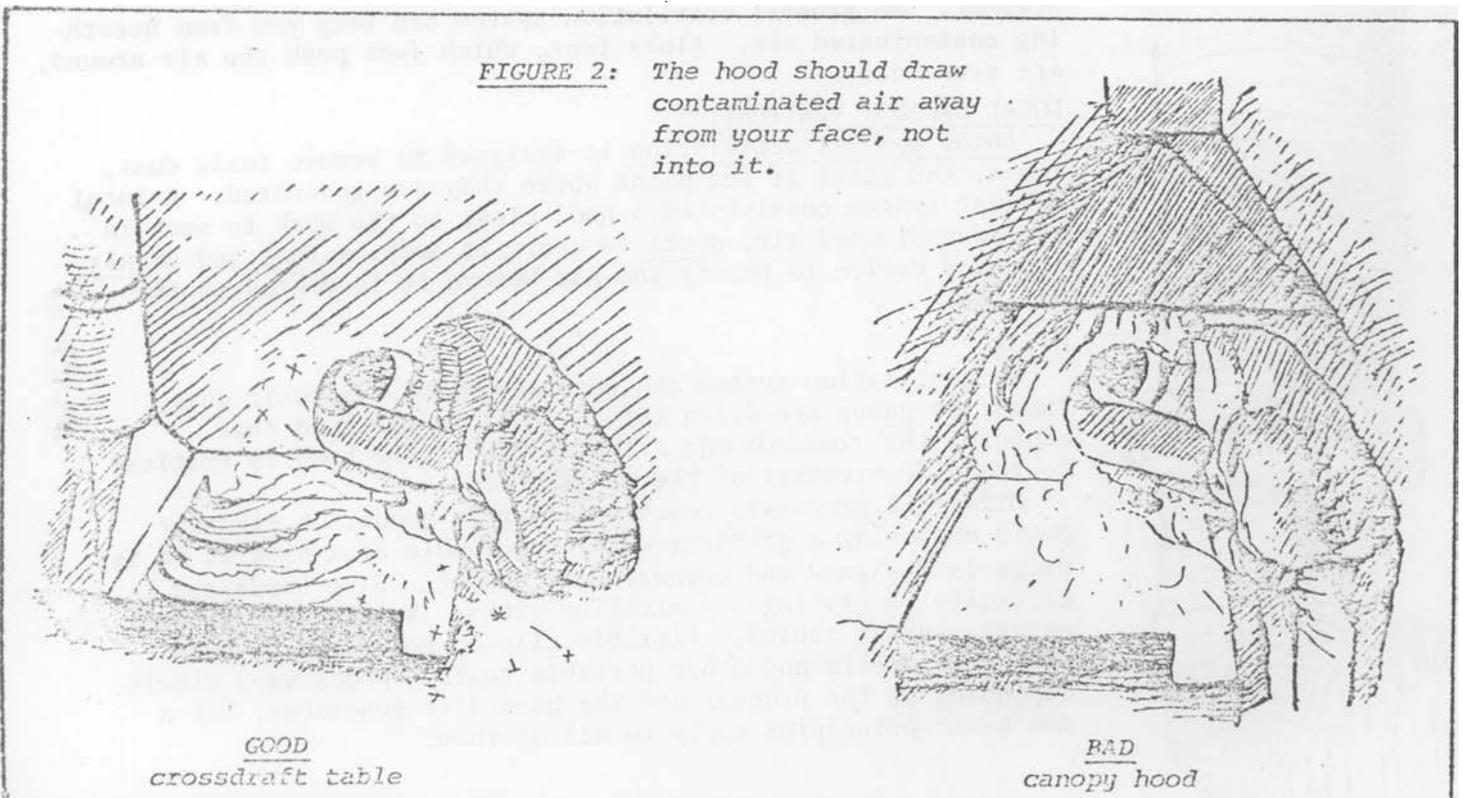
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#### FOR MORE INFORMATION

Work is Dangerous to your Health, by Jeanne Stellman and Susan Daum, is a good general reference on occupational hazards. Chapter Nine discusses ventilation. Available in bookstores for \$1.95.

Industrial Ventilation: A Manual of Recommended Practice, published by the American Conference of Governmental Industrial Hygienists, is a good textbook on ventilation. It explains the principles of general and local exhaust systems and includes several hundred pages on design. Available from the ACGIH Committee on Industrial Ventilation, PO Box 453, Lansing, Michigan 48902 for \$5.00.

The OSHA General Industry, Maritime, and Construction standards give the legal requirements for ventilation systems. Available from the nearest OSHA office.



Evaluation of Samples

Manual Analysis

- A. Titration: A chemical is very slowly added to the substance collected. When a color change occurs the concentration of the contaminant can be determined.

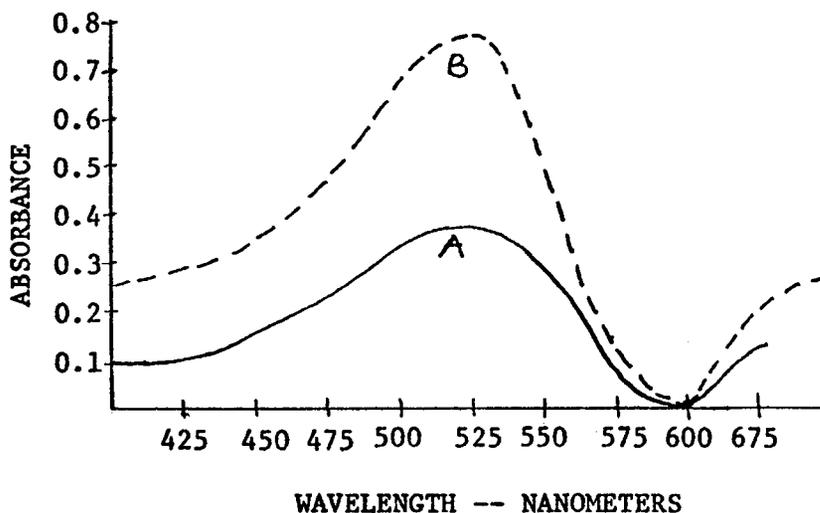
Instrumental Analysis

B. Spectrophotometry

Types of spectrophotometry used in analyzing chemical contaminants include: visible, ultraviolet, infrared and atomic absorption.

1. Visible:

When a specific chemical (reagent) comes in contact with a substance a color change often occurs (see titration above). The amount of color change is determined by the amount of light absorbed by the solution, which in turn relates to the amount of the contaminant in the sample.



Curve A: dithizone reagent in chloroform - some absorbance at 525 because of a small amount of lead contamination in the dithizone.

Curve B: when lead is added to the solution there is a great increase in absorbance at the same wavelength (525). This indicates a higher amount of lead.

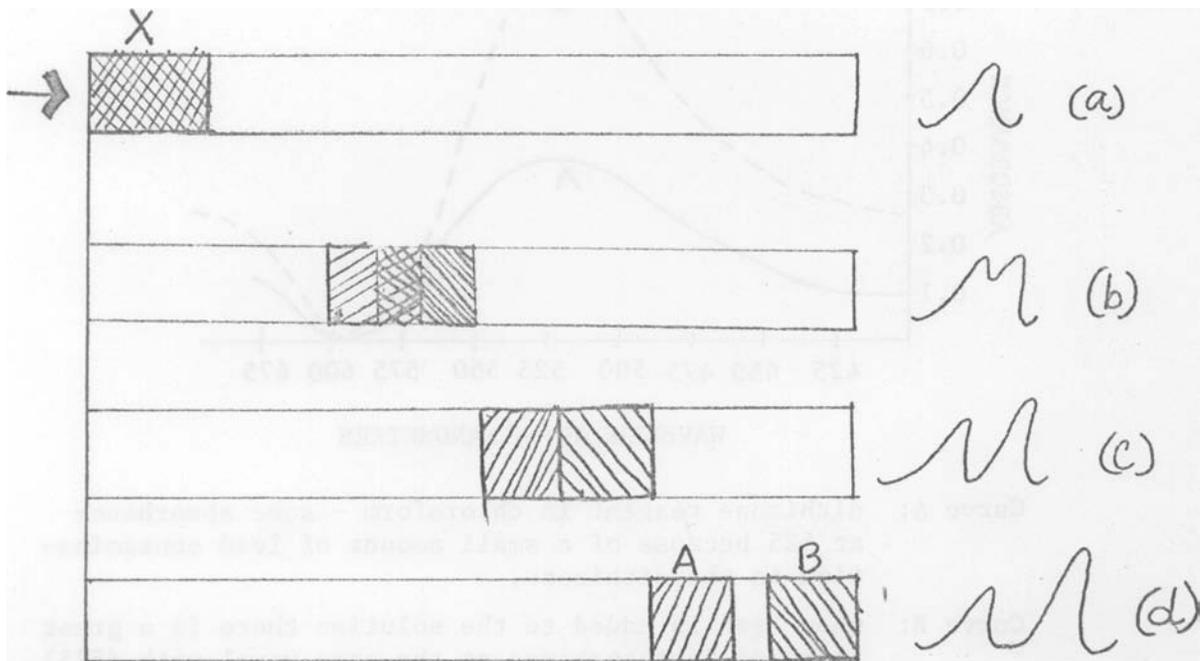
2. Atomic Absorption Spectrophotometry:

When a substance is heated or burned parts of it (atoms) are excited, those that are not are considered to be in the ground state. Atomic absorption spectrophotometry measures the number of ground state atoms, and the information which appears as peaks on a strip chart can be related to the concentration of

a sampled substance. A solution containing a known concentration of a substance (for example lead) is sucked into a flame. Light of a certain wavelength passes through the flame and substance, and the absorbance is indicated on a meter, a strip chart, or a digital readout system. This method of analysis is often used in cases of lead exposure, particularly for blood samples.

C. Gas Chromatography:

This method of analysis is used to identify the various components of a sample and also their concentration. Small amounts of the sample are introduced into the chromatograph and carried by an inert (carrier) gas into a column. Components of the sample are separated into distinct groups or bands in the column. These groups move through the column at different rates and emerge as separated components. As the carrier gas emerges from the column it produces a signal that is proportional to the amount of each component present. The responses are amplified and show up on a recorder as peaks. The time for each peak to appear (retention time) is characteristic for a specific chemical. The retention time identifies the substance and the area of the peak is proportional to the amount of the substance. Gas chromatography is useful for determining the organic components of a sample.



D. Emission Spectrography:

The collected substance is vaporized, the reaction producing lines of light or spectra, which are recorded, often on a photographic plate. This method can determine what substances are present because each element (carbon, nitrogen etc.) has a unique spectra or set of lines. Quantity, or how much of each material is present, is determined by the intensity of the lines.

E. X-ray diffraction:

Radiation striking crystalline material is diffracted (broken up) at angles which depend on the crystal structure. A spectrometer measures the wavelength and intensity of the diffracted rays. The resulting diffraction pattern is characteristic of the components of a sample. Crystalline materials such as free silica and asbestos can be identified by this method.

F. Particle Sizing and Counting:

Dust samples are collected on special filters, in glass collectors called impingers, or in instruments such as impactors. The dusts are then analyzed microscopically either to determine the total amount of dust, the number of fibers (for asbestos) or the size of separate particles or fibers. A regular optical microscope may be used, or an electron microscope may be needed to size respirable particles (those that can reach the deep lung).

## Evaluating Monitoring Data

### I. Be familiar with common sampling instruments or sampling setups.

#### A. Gases and Vapors

1. Evacuated Flasks or Cylinders
2. Fritted bubblers or impingers
3. Detector (indicator) tubes and pumps
4. Direct reading meter instruments such as Ecolyzer.
5. Charcoal tubes -- particularly for organic solvent vapors.

#### B. Dusts

##### 1. Pump and impinger:

Used for collecting dusts larger than 0.75mg in a liquid. The counting is done under light microscope and exposures are given in mppcf.

##### 2. Two-Stage Sampling:

Cyclone and filter used, the dust weighed, and the exposure measured in mg/m<sup>3</sup>.

##### 3. Pump and filter:

Dusts or fibers gathered on special membrane filters -- ex. Asbestos: fibers counted and sized by light microscope and exposures measured in fibers/cc greater than 5 μm (micrometers and micron (μ) used interchangeably). This type of sampling also is used to sample when the total dust exposure (not just respirable) is desired.

This method may also be used to measure exposures to toxic fumes such as lead.

#### C. Combustible gases and vapors:

Combustible gas indicators.

### II. Check accuracy of method.

#### A. Check the accuracy of the method used to sample.

If the accuracy is + 40%, and a standard level (TLV) is small, the plus/minus accuracy can make a great difference.

#### B. Look for NIOSH approved methods and check for accuracy in following these methods.

Ex. NIOSH recommends using charcoal tubes for sampling for toluene: Their specifications are 10 minute samples at a pump flowrate of 1 l/minute or less.

These can be checked by calling or writing the NIOSH regional office or the State department which is responsible for Occupational Health and Safety in your area.

## Abbreviations

1. cc -- cubic centimeter; lcc is equal to 1 milliliter.
2. L -- liter.
3. L/m -- liters per minute.
4. mg/m<sup>3</sup> -- milligrams of the substance per cubic meter of air.
5. mppcf -- millions of particles per cubic foot of air.
6. ppm -- parts of a substance per million parts of air.
7. TWA -- time weighted average; usually used for exposures averaged over an 8-hour day.
8.  $\mu$  -- micron; now used interchangeably with  $\mu\text{m}$  -- micrometer.
9.  $\mu\text{g}$  -- micrograms; a microgram is one millionth of a gram, one one-thousandth of a milligram.

Formulas

I. To find an 8-hour time weighted average (TWA):

$$\frac{C_1 \times T_1 + C_2 \times T_2 \dots \dots \dots + C_n \times T_n}{8} = \text{TWA}$$

where C = concentration measured for a given period of time.  
where T = length of time for each corresponding concentration.

II. To determine if exposure to a mixture is above the allowable limit:

$$\frac{\text{TWA}_f}{\text{TWA}_a} + \frac{\text{TWA}_f}{\text{TWA}_a} \dots \dots \dots =$$

where  $\text{TWA}_f$  = the actual TWA found for each substance using formula I.  
where  $\text{TWA}_a$  = the TWA allowed, that is the standard level, also referred to as the TLV.

If the total of the fractions is greater than 1(one), the allowable limit has been exceeded and a hazard probably exists.

III. 8-hour time weighted average for noise:

$$\frac{T_f}{T_a} + \frac{T_f}{T_a} \dots \dots \dots =$$

where  $T_f$  = the total time of exposure at a specified noise level.  
where  $T_a$  = the total time allowed by the standard at that same noise level.

If the sum of the fractions exceeds 1(one), then the exposure exceeds the standard limit.

Permissible Noise Exposures

<u>Duration per day</u>	<u>Sound level</u>
<u>(hrs)</u>	<u>dBA</u>
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

Problems

1. 4-hr samples were taken to determine employee exposure to MEK (methyl ethyl ketone). The 8-hr standard is 200ppm. What are one time weighted averages for each of the 4 workers? Which workers exceed the standard?

	A.M.	P.M.	8-hr average
A.	170	185	
B.	250	200	
C.	200	210	
D.	350	175	

2. An impinger was used to sample for dinitrotoluene, which has a TLV of  $1.5\text{mg/m}^3$ . The following chart lists the levels of dinitrotoluene found. The workday is from 8-5 with a one hour lunch break at 12:00 and the worker is exposed all day except for lunch time. Was the worker over-exposed?

<u>Sample #</u>	<u>Results</u>	
	<u>mg/m<sup>3</sup></u>	<u>Hrs.</u>
1	1.8	8:30 - 10:00
2	1.0	10:00 - 12:00
3	3.1	13:00 - 15:00
4	2.5	15:00 - 17:00

3. 4 workers who use grinding wheels as part of their jobs wore personal samplers for 8 hours. The samples were analyzed for % free silica and total respirable dust. The following data are the results: Which of the workers, if any, are overexposed?

	<u>% Quart (free silica)</u>	<u>Total Respirable</u>
A	5%	1.5mg/m <sup>3</sup>
B	8%	1 mg/m <sup>3</sup>
C	10%	.50mg/m <sup>3</sup>
D	48%	1.5mg/m <sup>3</sup>

4. Three workers who degrease metal parts with Toluene (Cal TLV 100ppm) had the following exposures. In any case were their employers not in compliance?

	<u>A</u>	<u>B</u>	<u>C</u>
2 hours	75	65	95
2 hours	90	80	90
1 hour	0	0	0
2 hours	90	140	130
1 hour	150	95	95

5. Workers A and B are exposed to a mixture of formaldehyde (TLV-5ppm), MEK (TLV-200ppm), and methylene chloride (TLV-500ppm). Their 8 hour time-weighted average exposures are listed below. Is either worker overexposed?

	Formaldehyde	MEK	Methylene Chloride
A	2ppm	75ppm	90ppm
B	1.5ppm	100ppm	150ppm



7. Exposures of several workers to noise were measured at various points during a 7 1/2 hour shift. Are any of the workers overexposed?

	<u>Time(hrs)</u>	<u>Exposure(dBA)</u>		<u>Time(hrs)</u>	<u>Exposure(dBA)</u>
A.	2	100	B.	1	85
	3	90		3 1/2	95
	1/2-lunch	0		1/2	0
	2 1/2	85		3	90
C.	1	90	D.	2	95
	2	95		1 1/2	100
	1	92		1 1/2	105
	1/2	0		1/2	0
	2	90		1 1/2	95
	1 1/2	95		1	105
E.	2	100			
	2	105			
	1/2	0			
	1 1/2	95			
	2	100			

## WORKPLACE MONITORING

### Industrial Hygiene References

1. American Conference of Governmental Industrial Hygienists. Industrial Ventilation: A Manual of Recommended Practice. (Cincinnati: ACGIH, 1972)  
  
Covers principles of ventilation systems. Many drawings and examples of systems for specific operations.
2. American Industrial Hygiene Association. Heating and Cooling for Man in Industry. (Akron: AIHA, 1975)  
  
Evaluation and control of heat and cold stress conditions in the workplace.
3. International Labor Organization. Encyclopedia of Occupational Health and Safety. (New York: McGraw Hill, 1972)  
  
A comprehensive encyclopedia containing information on occupational diseases, hazards, and industries and their associated hazards.
4. Intersociety Committee. Methods of Air Sampling and Analysis. (Washington: American Public Health Association, 1972)  
  
Standardized methods for sampling and analyzing air for hazardous contaminants.
5. National Institute for Occupational Safety and Health. The Industrial Environment - Its Evaluation and Control. (Washington: U.S. Government Printing Office, 1973)  
  
A basic, comprehensive industrial hygiene textbook.
6. Patty, Frank, ed. Industrial Hygiene and Toxicology. (New York: Interscience Publishers, Inc., 1958), 3 vol.
  - I. General Principles - Introduction to industrial hygiene
  - II. Toxicology - Occupational health hazards, recognition and control
  - III. Industrial Environmental Analysis

7. Salmon, et. al. Industrial Noise Control Manual. (Washington: U.S. Government Printing Office, 1975) HEW Publication # (NIOSG) 75-183.

Basic information on noise control techniques. Practical information to provide user with knowledge of noise measurement and control.

8. Sax, N. Irving. Dangerous Properties of Industrial Materials. (New York: Van Nostrand Reinhold Co., 1975)

An encyclopedia of chemicals and their hazards plus sections on control of air contaminants and noise; radiation hazards; cancer risks; industrial fire protection; and labeling.

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## Surveying the Workplace

### 1. Finding the Problems

- A. Keeping a Notebook
- B. Using the 7 Step method of Hazard Identification

### 2. Conducting a walk-through survey

- A. Developing and using questionnaires and survey forms
- B. Dividing the plant into survey areas
- C. Conduct of survey - What to look for:

(1) Chemical Hazards: - labels from materials used including any precautions listed:

- how chemicals are handled
- ventilation provided - how well operating
- number of workers exposed
- how materials are stored
- procedures for spills, cleanup
- protective equipment provided

(2) Physical Hazards: - Noise. - equipment producing loud noise; impact or continuous; estimation of how noisy it is; protective equipment provided; number of workers exposed

- temperature extremes - heat or cold producing equipment or jobs; controls provided; number of workers affected

(3) Safety Hazards

### 3. Analyzing survey results; picking target areas

## SURVEYING THE WORKPLACE

In order to be an effective health and safety officer in your Local you must be able to recognize and evaluate the hazards of the workplace. A systematic survey is the most effective way of doing this. The survey should be carried out department by department, work area by work area by inspecting the site and interviewing the workers in the various areas.

In order to facilitate this survey, OCAW is providing a form which can be filled out by the health and safety officer. The attached form relates to health hazards on the job. A survey form for safety hazards is presently being developed and will be made available shortly.

### HOW TO USE THE SURVEY FORM

1. The workplace should be divided into logical areas where similar types of processes occur. If an area has more than one process, then several forms should be filled out for each individual process.
  2. Processes should be identified by their commonly used name. It is important to know whether the work is carried out in the open or in sealed pipes or vats.
  3. In order to assess the possible chemical hazards, all chemicals used or produced must be identified. In this section you may run into the problem of trade names. If you only know a chemical by a trade name or a code number, indicate it as such on the form. After the survey is completed you can then go through the necessary channels in order to identify the substance(s).
  4. Whether or not the process is open or closed, there may still be fumes, dust, mists or gases. If you can, identify which of these forms of pollutant is present and what they are.
  5. Ventilation can either be natural (open windows or doors) or fans, ducts, or blowers. You may not have any ventilation at all. If you or others working in the area do not feel that the ventilation is adequate, this is probably as good an examination of the ventilation as any engineer can make.
- Many times an adequately designed system has so many hoods or ducts added to it that it can no longer perform properly. Good ventilation means that the worker does not smell the chemicals he or she works with or is not irritated by them. The ventilation system when installed had a specific capacity. Insist on finding out what this designed capacity was and then insist on air measurement to see how the air flow rate compares with the designed capacity.

## SURVEYING THE WORKPLACE

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6. The items listed represent the various kinds of physical hazards that may be present. All of them have serious consequences, but be particularly careful to know all radiation sources. They should be marked with the Atomic Energy seal. Radiation sources are often used in Quality Control to monitor the thickness of films and the flow rate in pipes. They must all be treated with respect.

7. In order to assess the hazardous potential of the environment, air samples must be taken to find the concentration of the various solids. By law, all areas with asbestos exposure require that at least one such measurement shall have been taken. If no air samples were taken in the past, write this down. If the results were not made available, make a formal request for them. Fill out the OCAW Asbestos Questionnaire.

8. One of the problems of occupational health is that very few concrete facts are known about the effects of long-range exposure to various industrial hazards. The way studies are carried out is by examining workers who have been exposed to these hazards. In an approximate way you can do this as well. For instance, if any worker complains of rashes, nose bleeds or has frequent kidney infections, then this can mean that there is some substance or condition in the workplace causing the problem. Many substances have particular tests which indicate exposure. For instance, most metals like mercury, lead, cadmium, copper, etc., can be found in the urine and blood. Many solvents and other chemicals also show up in the body in various forms. You will be receiving shortly a Table of Common Chemicals and the appropriate exposure tests. Determine now whether this has ever been done in the past and whether anyone was ever apprised of the actual results. In addition, it is good practice to have regular medical examinations and it is especially important when people are forced to work in hazardous conditions.

Once again, did the workers ever receive the results of these examinations. In the future we will coordinate with the locals so that all the medical exam results can be sent to one particular physician so that we can correlate the results of the group as a whole and determine if any trends of illness develop.

9. Even before the passage of the Health and Safety Act and the recently negotiated Health and Safety Contract Language, OCAW members have been aware of various hazards in the workplaces. Using their right to bargain over the working conditions, have the stewards filed a grievance in the past. Make sure that the subject of these grievances have been covered somewhere in this survey form. If not, please add it as comment at the end of the survey form.

10. Similarly, have any accidents occurred in this area? What were they and what was done about them?

11. If there was a noise survey of the plant, indicate the level found and the day that the test was taken. Many substances can be monitored by permanently installed devices. Are there any such devices in the area? If so, when was the monitoring equipment last calibrated and what level is the alarm set at.

## SURVEYING THE WORKPLACE

Page 3

Once this survey form has been completed, you should be able to pinpoint many of the problem areas. For instance, if you are working with chemicals known only to you by a trade name, then this should be an immediate topic of discussion at your next joint Health and Safety Committee Meeting.

If the survey has found there to be inadequate ventilation, lack of proper monitoring, exposure to physical hazards and a neglect to administer the appropriate medical examination, then this too should be discussed at the meeting.

To systematically survey the workplace you should develop an agenda for fruitful and meaningful health and safety needs. This survey should be repeated monthly (it can be done by the area stewards with proper instructions). The survey form should be kept in the local so that a record of the kinds of exposure and any possible harmful results will be available.

When the safety survey form is completed and sent to you, it too, should be treated in the same manner as this Occupational Health Survey Form.

OIL, CHEMICAL AND ATOMIC WORKERS INTERNATIONAL UNION

OCCUPATIONAL HEALTH PLANT INITIAL SURVEY FORM

(Fill in appropriate spaces -- use reverse side for comments or additional space)

Date \_\_\_\_\_

1. AREA:

\_\_\_\_\_

2. PROCESS:

Is this an open or closed process? \_\_\_\_\_

3. CHEMICALS USED OR PRODUCED:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. IS THERE EXPOSURE TO: (identify them if you can)

Fumes \_\_\_\_\_  
Dusts \_\_\_\_\_  
Mists \_\_\_\_\_  
Gases \_\_\_\_\_

Is there skin contact with any chemicals? \_\_\_\_\_

Which ones? \_\_\_\_\_

5. VENTILATION:

Is there any ventilation? \_\_\_\_\_

Do you think it is adequate? \_\_\_\_\_

Is the system performing up to design capacity? \_\_\_\_\_

Air flow rate \_\_\_\_\_

6. PHYSICAL HAZARDS:

Are any of the following physical hazards present:

Noise _____	Vibrations _____
Temperature extremes: Hot _____	Cold _____
Poor lighting _____	Radiation sources _____
Ultraviolet, infrared or microwave radiation _____	

7. MONITORING:

Are air samples taken? \_\_\_\_\_ Results \_\_\_\_\_

8. MEDICAL:

Are there common medical complaints? (rashes, cough, burning eyes) \_\_\_\_\_

Do you know what the cause is? \_\_\_\_\_

Are there regularly administered:	Urinalyses _____
	Blood tests _____
	General Medical Exams _____

Do the workers or their physicians receive the results? \_\_\_\_\_

9. HAVE HEALTH & SAFETY GRIEVANCES BEEN FILED IN THE AREA? \_\_\_\_\_

Explain: \_\_\_\_\_

10. HAVE ANY ACCIDENTS OCCURRED IN THIS AREA? \_\_\_\_\_

11. FILL IN ONLY IF APPLICABLE:

Noise level \_\_\_\_\_ Date measured \_\_\_\_\_

Are there permanent monitoring devices for toxics? \_\_\_\_\_

Calibrated (date) \_\_\_\_\_  
 Level alarm set at \_\_\_\_\_

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## PLANT OPERATIONS SAFETY CHECK LIST

Walking-Working Surfaces

- |   |     |    |
|---|-----|----|
| 1. All factory walkways properly marked and cleared   | Yes | No |
| 2. All office area walkways cleared   | Yes | No |
| 3. All exterior walkways cleared and in good repair   | Yes | No |
| 4. All floor holes, floor openings, wall openings and skylights are properly guarded  | Yes | No |
| 5. Non-slip mats, gratings, false floors and other like materials are in use in wet and other hazardous areas                                 | Yes | No |
| 6. All mats, gratings, etc. are in good repair  | Yes | No |
| 7. Floor openings, hatchways, manholes are properly guarded with covers meeting specifications  | Yes | No |
| 8. All open sided floors, platforms and run-ways four feet or more above ground or floor level are properly guarded with toe boards installed | Yes | No |
| 9. All railings and toe boards meet specifications and are in good repair   | Yes | No |
| 10. All elevated load-bearing floors and roofs are conspicuously posted reflecting safe load limits   | Yes | No |
| 11. All other load-bearing surfaces are properly installed, in good repair, with load capacity clearly marked                                 | Yes | No |

Stairs and Stairways

- |   |     |    |
|---|-----|----|
| 1. All stairways (other than fire exits) and elevator and escalator shafts are clear, handrails and/or guardrails provided treads and risers in good repair with non-slip surface and adequate illumination | Yes | No |
|---|-----|----|

Ladders and Scaffolds

- |   |     |    |
|---|-----|----|
| 1. All ladders (except fixed ladders) equipped with safety feet   | Yes | No |
| 2. All ladders in good condition; wooden ladders maintained unpainted                                       | Yes | No |
| 3. Precautions are taken to prevent the use of metal ladders where there is possibility of electrical shock | Yes | No |

Ventilation

- |   |     |    |
|---|-----|----|
| 1. All work areas appear to be properly ventilated; no accumulation of smoke, dust, etc., was noted | Yes | No |
| 2. Temperature, humidity and air movement in all work areas apparently within comfort limits        | Yes | No |

Life Safety

- |   |     |    |
|---|-----|----|
| 1. Location and easy accessibility of at least two fire emergency exits (minimum requirement) for each work area confirmed with special attention to high hazard area | Yes | No |
| 2. Each fire emergency exit is properly marked and illuminated  | Yes | No |
| 3. Is the route to safety clear and unobstructed from the fire doors?   | Yes | No |
| 4. All fire emergency doors swing in the direction of exit travel   | Yes | No |
| 5. Fire emergency doors cannot be locked from inside, each is equipped with panic or other simple type of releasing device  | Yes | No |

## PLANT OPERATIONS SAFETY CHECK LIST

Fire Suppression Equipment

- |  |     |    |
|--|-----|----|
| 1. Does this facility have a volunteer fire brigade?   | Yes | No |
| 2. Are there regular training sessions being conducted?  | Yes | No |
| 3. All portable fire extinguishers are readily accessible, properly located and show servicing is up-to-date; maximum travel distance for all units not in excess of 75 ft. or 50 ft. in hazardous areas | Yes | No |
| 4. Each extinguisher has been checked for its adaptability to the hazard presented in the immediate area   | Yes | No |
| 5. Clearance of 36 in. maintained between sprinkler deflectors and top of stored material  | Yes | No |
| 6. All fire hoses in proper position and appear to be in good condition  | Yes | No |
| 7. Where manual fire alarm boxes are used, each is accessible from maximum travel distance of 200 ft.; the travel path unencumbered  | Yes | No |
| 8. Where fire control systems are used which are a hazard in themselves, appropriate warnings of such hazard are posted  | Yes | No |
| 9. All potential sources of fire and/or explosion from gases, vapors, fumes, dusts and mists inspected for correctable hazards   | Yes | No |

Electrical Wiring, Apparatus and Equipment

- |  |     |    |
|--|-----|----|
| 1. Clearly illustrated instructions for resuscitation of persons suffering from electrical shock are posted in all electrical stations, switchboards and transformers, entrance restricted to authorized persons | Yes | No |
| 2. Procedures for de-energizing electrical circuits reviewed for effectiveness   | Yes | No |
| 3. Examine extension cords and other temporary wiring for breaks, fraying or other defects   | Yes | No |
| 4. All interior wiring systems have grounded conductors continuously identified throughout the plant's electrical system   | Yes | No |
| 5. Electrical equipment operating between 50 and 600V are protected against accidental contact by an approved cabinet or other enclosure   | Yes | No |
| 6. Insulation mats and protective gear are provided in all areas where more than 150 V to ground are necessarily exposed within eight feet from the floor  | Yes | No |
| 7. Sufficient access and working space is provided and maintained about all electrical equipment for ready and safe operation  | Yes | No |
| 8. Each electrical outlet box is provided with a cover which effectively protects against the hazard from accidental contact   | Yes | No |
| 9. Inspection reveals instructions for disconnection are attached to each electrical motor and appliance   | Yes | No |

## PLANT OPERATIONS SAFETY CHECK LIST

Electrical Wiring, Apparatus and Equipment

- |   |     |    |
|---|-----|----|
| 10. All portable electrical tools are equipped with hand-operated switches which are manually held in the closed position all electrical cables in good condition | Yes | No |
| 11. In locations where dust collects on electric motors causing potential ventilation deficiency, suitable type of enclosed motor is used                         | Yes | No |
| 12. In battery rooms, provision has been made for diffusion of gases to prevent the accumulation of an explosive mixture  | Yes | No |

Industrial Sanitation

- |   |     |    |
|---|-----|----|
| 1. Toilet facilities meet the following standards:  |     |    |
| (a) Separate facilities are provided for each sex   | Yes | No |
| (b) All are within 200 ft. of the work area where practicable   | Yes | No |
| (c) The number of facilities for each conform to standard   | Yes | No |
| (d) Toilet rooms are clean, adequately lighted and ventilated   | Yes | No |
| 2. Dressing rooms, where required, are clean, adequately lighted and equipped with individual clothes facilities  | Yes | No |
| 3. Lavatories are provided in appropriate numbers with hot and cold water, individual hand towels, and are maintained in good repair; lavatory area is clean and well lighted | Yes | No |
| 4. Drinking fountains are installed within 200 ft. of all work areas; they are clean and maintained in good working condition   | Yes | No |
| 5. Outlets for non-potable water are clearly marked to indicate that the water is not for human use and/or consumption  | Yes | No |
| 6. There are no cross-connections, open or potential, between a potable and non-potable water supply  | Yes | No |
| 7. Receptacles for waste are adequate in design and number; they are leak-proof, well maintained and serviced regularly   | Yes | No |
| 8. Adequate control over insects, rodents and vermin  | Yes | No |
| 9. The lunch room is adequate in size, clean, well maintained and physically separated from areas offering the hazard of exposure to toxic materials                          | Yes | No |
| 10. All food is properly stored, refrigerated where appropriate and handled under acceptable sanitary practices   | Yes | No |
| 11. Vending machine areas are maintained in a good sanitary condition   | Yes | No |

Material Handling

- |   |     |    |
|---|-----|----|
| 1. All fiber rope and fiber rope slings used in material handling are in good condition; no evidence of excessive wear or visible defects         | Yes | No |
| 2. All wire rope and wire rope slings are in good condition; no evidence of mechanical damage, bumps, broken strands, or other visible defects    | Yes | No |
| 3. All chain slings, including end fastenings, are in good condition; no evidence of excessive wear or mechanical damage; all are properly stored | Yes | No |
| 4. Each chain bears a current inspection tag  | Yes | No |
| 5. Repairs to chains are made only under qualified supervision; all are proof tested for load under the prescribed standards                      | Yes | No |

## PLANT OPERATIONS SAFETY CHECK LIST

Material Handling (continued)

- |  |     |    |
|--|-----|----|
| 6. All hooks and rings are being tested before being put into service with records of dates and results of such tests  | Yes | No |
| 7. Inspection of all hooks reveals all in good operation; no visible defects   | Yes | No |
| 8. Shackles are in good repair; no visible defects   | Yes | No |
| 9. Cranes and hoists are in good operating condition; regular schedule for servicing maintained; no visible defects, inspection records properly maintained, proper operating procedures are followed                          | Yes | No |
| 10. All industrial trucks are equipped with warning devices; all are equipped with overhead guards   | Yes | No |
| 11. All industrial trucks, other than electrical-powered are re-fueled only in fire-safe areas specifically designated for that purpose  | Yes | No |
| 12. All L P gas-powered industrial trucks are properly stored away from underground entrances or elevator shafts to avoid the hazard of explosion  | Yes | No |
| 13. In refueling operations, all engines are stopped; smoking is prohibited  | Yes | No |
| 14. Where electric batteries are recharged, facilities are provided for flushing and neutralizing spilled electrolyte, for fire protection, and adequate ventilation is provided for dispersal of gas emanating from batteries | Yes | No |
| 15. The load capacity is indicated on each truck and is strictly observed  | Yes | No |
| 16. All conveyor systems in good operating order; no visible defects; adequate clearance from aisles and walkways; stopping devices adequate in number and location  | Yes | No |

Hand and Portable Powered Tools

- |  |     |    |
|--|-----|----|
| 1. All hand and portable power tools are in good operating condition; no defects in wiring; equipped with ground wires                                   | Yes | No |
| 2. All portable equipment is equipped with necessary guarding devices  | Yes | No |
| 3. All compressed air equipment used for cleaning operations is regulated at 30 psi or less; chip guarding and personal protective equipment is provided | Yes | No |

Machine Guarding and Mechanical Safety

- |   |     |    |
|---|-----|----|
| 1. Every production machine has been inspected as to the following items, all found to be in satisfactory operating conditions: |     |    |
| (a) Cleanliness of machine and area   | Yes | No |
| (b) Securely attached to floor  | Yes | No |
| (c) Operations guarded  | Yes | No |
| (d) Illumination  | Yes | No |
| (e) Effective cut-off devices   | Yes | No |
| (f) Noise level   | Yes | No |
| (g) Adjustment  | Yes | No |
| (h) Tripping mechanism  | Yes | No |
| (i) Material flow   | Yes | No |

## PLANT OPERATIONS SAFETY CHECK LIST

Material Hazards

- |   |     |    |
|---|-----|----|
| 1. All hazardous gases, liquids and other materials are properly labeled and stored                                     | Yes | No |
| 2. Areas where hazardous materials are in use are fire-safe and restricted to authorized employes                       | Yes | No |
| 3. Where x-ray is used, the area is properly shielded and dosimeters are used and processed for all authorized employes | Yes | No |
| 4. Protective clothing is worn by employes when oxidizing agents are being used   | Yes | No |
| 5. All hazard areas are posted with NO SMOKING signs  | Yes | No |
| 6. All areas where caustics or corrosives are used have been provided adequately with eye fountains and deluge showers  | Yes | No |

Material Storage

- |   |     |    |
|---|-----|----|
| 1. All material is stored so as not to create either a fire hazard or a safety hazard to personnel          | Yes | No |
| 2. All commodities shall be stored, handled and piled with due regard for their fire hazard characteristics | Yes | No |
| 3. Outside storage of material is maintained at least 15 ft. from an exterior wall                          | Yes | No |
| 4. Outside storage areas are in good condition; weeds and grass under control                               | Yes | No |

Surface Preparation, Finishing and Preservation

- |  |     |    |
|--|-----|----|
| 1. All spray and dip painting areas are properly shielded, adequately ventilated and well-maintained; equipped with non-explosive electrical equipment | Yes | No |
| 2. All dip operations are provided with an automatic fire extinguishing system; adequate first aid supplies and equipment are in immediate area        | Yes | No |
| 3. All spray booths are of adequate construction with a 3 ft. clearance area surrounding each  | Yes | No |
| 4. Face shields and other protective equipment are provided in steam cleaning operations   | Yes | No |
| 5. All abrasive blasting area properly shielded; no evidence of leakage of shot; operators have adequate protective equipment                          | Yes | No |
| 6. All drying equipment is properly controlled, vented and maintained  | Yes | No |

Personal Protective Equipment

- |  |     |    |
|--|-----|----|
| 1. Adequate protective clothing and equipment is required for all hazardous operations | Yes | No |
| 2. All protective clothing and equipment is properly stored for ready use              | Yes | No |

PLANT OPERATIONS SAFETY CHECK LIST

Welding Cutting, Heating and Brazing

- |  |     |    |
|--|-----|----|
| 1. All compressed gases are stored and used according to standards | Yes | No |
| 2. Welding operations are properly screened                        | Yes | No |
| 3. Fire watchers are designated where required                     | Yes | No |

Medical Facilities and Records

- |   |     |    |
|---|-----|----|
| 1. The dispensary as equipped, the availability of professional or trained personnel, and the maintenance of records conform to corporate minimum standards and are in compliance with OSHA Standards | Yes | No |
|---|-----|----|

## MEDICAL SCREENING

Medical examinations may successfully detect unnoticeable disease processes or the causes of noticeable symptoms. People are often given medical examinations to insure they are fit to continue working, playing sports, attending school, etc. Early detection of a health problem increases the possibilities of treatment and the body's complete repair.

Medical screening picks up such common diseases as hernias, high blood pressure, diabetes, tuberculosis, syphilis, and glaucoma. Workers may be examined periodically to detect effects of potential hazards in their workplaces. Physicians conducting occupation-related examinations must know what potential hazards to expect in the particular workplaces, the potential diseases and difficulties caused by the hazards, and the kind of examination that most clearly determines whether or not a problem exists. Because few doctors are trained specifically in recognizing occupation-related diseases, workers must alert the examining physician to any symptom or health change, no matter how minor, that might be occupation-related.

The medical examination consists of a medical history, a complete or specific physical examination, and laboratory or X-Ray tests. A proper examination should sufficiently cover all areas relating to the identified problem. In addition, an occupation-related exam should include a potential exposure history and a work history.

## Workplace Monitoring

- I. Initial Evaluation - The walk-through survey
  - A. Purpose
  - B. Methods
  
- II. Workplace Standards
  
- III. Principles of Sampling
  - A. Where
  - B. How long and How often
  - C. When
  
- IV. Instrumentation
  - A. Considerations
    1. Accuracy
    2. Cost
    3. Utility
  - B. Airborne Contaminants
    1. Direct Reading
      - (a) Universal Tester
      - (b) Portable Meters
    2. Requiring Analysis
      - (a) Pump and Accesories - filters, impingers, charcoal tubes, etc.
  - C. Noise
    1. Sound Level Meter
    2. Impact Noise Meter
    3. Dosimeter
  - D. Ventilation
    1. Anemometer
    2. Smoke Tubes
  - E. Heat
    1. Wet Bulb Globe Thermometer
  - F. Radiation
    1. Ionizing
      - (a) Geiger Counter
      - (b) Film Badges and other Dosimeters
    2. Non-ionizing
      - (a) Thermopile
      - (b) Photocell
  - G. Illumination
    1. Light Meters

### The Laboratory Examination

Unlike 50 years ago when few tests had yet been developed, current medical practices utilize the laboratory to a very great extent. However, laboratory tests are not always exact; a certain number of the normal results may in actuality be abnormal, and vice versa. Interpretation of any laboratory results need to be reviewed by someone who understands all potential pitfall.

During the last 10 years the use of Automated Multiphasic Health Screening Tests (AMHST) have increased. In this sort of package 10 to 25 different laboratory tests are performed for a relatively low cost. The AMHSTs vary greatly. Some include 12 to 15 separate chemistry tests; others include aspects of the physical examination as well as various blood tests, hematology tests, X-Rays, and electrocardiograms. Though this sort of package may be adequate for assessing a person's general state of health, they are not usually helpful to detecting specific occupation-related diseases. AMHSTs designed for specific groups of workers would have to include specific tests relating to their particular exposures. For example, workers exposed to lead should have specific tests determining the lead content in the blood.

Important things to consider when evaluating laboratory screenings:

1. are the tests appropriate for my potential diseases?
2. is the person performing the tests qualified?
3. will the test results be specific to my problem or general?
4. will I be told the tests' results? The medical record belongs

to the examined individual even when an employer has paid for both the testing and evaluations. Individuals may request test results directly from the testing physician or have their private physicians request these results.

Obviously, the more workers know about their occupation-related hazards, the more they can insure adequate screening.

#### EXAMPLES OF LABORATORY TESTS

##### Blood Tests:<sup>\*</sup>

- a. Chemistry tests indicating normal or abnormal liver, kidneys, heart.
- b. Hematology tests, including white and red-cell counts.

##### X-Rays:

- a. Chest X-Rays using 14 x 17 inch film are the only satisfactory ones; using miniature pictures is not adequate. X-Rays of other body parts should be avoided unless specifically indicated.
- b. Using back X-Rays to screen out workers susceptible to back injuries is not successful. This practice only exposes workers to excessive radiation.

##### Lung Function Tests:

Measure the lungs' capability with an instrument called a spiogram. For example, when brown lung is suspected among workers exposed to cotton dust,

a spirogram should be taken on Monday before the workers start work, and later in the week. Just measuring lung capacity at some time during the day is not sufficient.

#### Cytology Tests:

Detect cancer. In general medical practice, the most common version is the cervical Pap smear. Occupational-related cytology tests are taken from the lungs via sputum smears or the urinary bladder via urine samples.

#### Urine Tests:

Indicate the kidneys' state and other general body conditions. Also detects certain metals such as mercury and lead.

#### Electrocardiogram (EKG) Test:

Measures the heart's functioning, indicates heart attacks or coronary artery disease. Utilizing a treadmill to perform the stress electrocardiogram on people without heart disease symptoms is believed by some to be much more effective than the usual EKG performed with the patient lying down.

\* When a blood test is performed and the result is normal, that means only the result of that specific test is normal. Others may not be normal or may not have been performed at all.

### The Medical History

All doctors are trained to take medical histories. Few, however, are trained to include occupational exposure histories. Because many jobs are complex, it would be impossible for every doctor to know about every job-related hazard or potential hazard. Workers must tell the doctor about the various materials with which they work. They probably know more about their jobs and potential hazards than the doctors.

Any problems possibly related to work such as frequent headaches at work though not at home, eye irritation or strain, shortness of breath at work though not at home, or any difference between work and home symptoms should be brought up during this part of the examination.

### The Physical Examination

A physical examination can be either complete or specific. A "complete" physical exam looks at all parts of the body. It may be cursory or exhaustive. Such an exam takes from 10 to 25 minutes per patient, excluding history-taking or laboratory-testing time. In a specific examination, only pertinent portions of the body are examined. A specific examination for a sprained ankle would not cover the lungs unless they had been involved in the injury.

In occupational-related examinations, the specific examinations can often times be much more valuable than "complete" physicals if the examining physician knows what to look for and which tests to use.

## DESIGNING A STUDY OF HEALTH EFFECTS OF THE WORKPLACE

Many unions, both local and international, have recently become increasingly interested in conducting studies to discover the health effects of the workplace environment. Sometimes the union leadership does not have adequate advice as to what makes a study scientifically acceptable (so that it will hold up under counter attack) or representative (so its results reflect the actual health hazards facing the membership).

In any study, the following must be considered:

1. How the group to be examined is chosen. Basing a study on volunteers is not always a good idea because they may not represent the workforce's actual make-up. Randomly chosen samples are usually more scientifically acceptable.
2. The potential hazards to which the workforce is being exposed. Some idea of the hazards is important if you (or an expert) are to know which tests to run.
3. What tests are appropriate to discover problems. For example, if the workforce is being exposed to lead you would want the study to include specific blood lead-level tests. Avoid multiphasic screening packages unless you are sure they will do all you want them to do.
4. How the union is to use the study results, and what each participant will find out about his/her results.

The following three pages are an example of one union's efforts to develop a testing program evaluating its membership's health. Please read the introductory information and the tables, and think about the accompanying questions. Then we will discuss the study. Be sure to consider whether the study's design can be considered scientifically acceptable or the results conclusive.

## EVALUATION OF HEALTH DATA

In 1984 the union wanted to assess the health status of the membership especially in relation to the workplace environment. The union informed the membership about the free examinations that had been arranged with a local clinic. There were 230 volunteers out of a total of 5000 members in the local. The examination included a chest x-ray, pulmonary function test, and an audiogram but only the pulmonary function tests will be discussed in this problem.

The pulmonary function tests were performed with the use of a spirogram. Two types of tests were performed:

- a) FVC (Forced Vital Capacity) is the amount of air that an individual can forcefully exhale after taking as deep a breath as possible (a measurement of the total amount of air the lungs can breathe);
- b)  $FEV_1$  (Forced Expiratory Volume in one second) is the amount of air that the individual can forcefully exhale in one second (a measurement of speed of breathing)

The results from the FVC and  $FEV_1$  were compared with a chart of values that are expected for healthy persons of the same age and height. (Taller people have greater lung capacity than do shorter people). Then, two mathematical calculations were performed to determine whether or not the tests were normal:

- a)  $FEV_1/FVC$  is the ratio of the air expired in one second divided by the total air expired. Abnormal values are interpreted as meaning some degree of "obstructive" disease such as that seen in emphysema, chronic bronchitis, or asthma;
- b) %FVC is the ratio for the FVC result from the individual's test divided by the predicted FVC value from the chart. Abnormal values are interpreted as meaning some type of lung disease that prevents the lung from expanding properly. Certain types of occupational diseases like asbestosis or other types of fibrosis (scarring) can produce abnormally low results.

Tables 1 & 2 show the relationships among workers with abnormal pulmonary function test results.

TABLE 1

Workers with Normal $FEV_1/FVC$ and Abnormal %FVC		
Age Group	Number of Workers	% of all Workers in Age Group
20 - 29	3	8.1
30 - 39	4	9.1
40 - 49	15	29.4
50 - 59	21	27.6
60 - 69	12	57.1
<b>TOTAL</b>	<b>55</b>	<b>24.1</b>

TABLE 2

Workers with Abnormal $FEV_1/FVC$ and Normal %FVC		
Age Group	Number of Workers	% of all Workers in Age Group
20 - 29	3	8.1
30 - 39	2	4.5
40 - 49	4	7.8
50 - 59	5	6.6
60 - 69	1	4.8
<b>TOTAL</b>	<b>15</b>	<b>6.6</b>

The following questions need to be answered in this problem:

1. Do the pulmonary function results provide you with enough information or do you need more information? If so, what other information?
2. Would you be willing to file any worker's compensation claims based on the information presented? If not, why not?
3. What do you think of the way the testing was done? What do you think about the manner in which the problem was offered to the membership?

RIGHTS AND RESPONSIBILITIES OF EMPLOYEES

UNDER

CAL/OSHA

This Booklet explains how to use  
the California Occupational  
Safety and Health Act of 1973  
(CAL/OSHA) to eliminate the  
conditions which make your  
job unsafe or unhealthy.

CENTER FOR LABOR RESEARCH AND EDUCATION

Institute of Industrial Relations  
University of California, Berkeley

## PREFACE

This Booklet is dedicated to the improvement of the job safety and health of the more than seven million working people in the state of California. The new California law, described in detail on the following pages, represents more than just new rights for employees and new controls over unsafe and unhealthful working conditions. This new law, having passed both Houses of the State Legislature by more than two-thirds majorities, represents a clear commitment in California to the elimination of unsafe and unhealthy working conditions for both public sector and private sector employees.

The new law is known as the California Occupational Safety and Health Act of 1973 (AB-150 by Assemblyman Jack Fenton). It is an outgrowth of the Federal Occupational Safety and Health Act of 1970, which extended the right to a safe and healthy workplace to almost all working people in the United States.

It is important to realize that these new laws set the stage and provide the authority for a governmental regulatory program. But, governmental regulatory programs are only part of the answer. Equally important in the implementation of these laws is the willingness of employees to communicate their concerns about health and safety hazards to appropriate individuals so that hazardous conditions may be eliminated without delay.

**RIGHTS AND RESPONSIBILITIES  
OF  
EMPLOYEES  
UNDER THE  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ACT OF 1973 (CAL/OSHA)**

**By**

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\* \* \* \*

Program forms and State Office of Procurement  
price list for California safety orders updated,  
January 1976.

## INTRODUCTION

### How to Use this Booklet

This Booklet covers the important aspects of the California Occupational Safety and Health Act of 1973 from the employees point of view. Its purpose is to help employees to stimulate corrective action on job safety and health hazards.

To use this Booklet, first read it all the way through to familiarize yourself with the law and the methods that it provides for investigating, evaluating and controlling health and safety problems. Then, to handle a specific problem, look at the Table of Contents in the front of the Booklet and select the sections which are pertinent to your needs.

It is important to note that, because the California Occupational Safety and Health Act of 1973 is new, some sections of this Booklet had to be based on the best judgment of the authors rather than actual experience with the application of the law. Topics falling in this category include protection against retaliation, refusal to work in violation of standards relationship to union contracts, and details of the inspection procedure. Employees should recognize this fact and should use the law in a careful and deliberate manner until it has been more clearly defined by court rulings.

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THE FEDERAL AND STATE LAWS

What is Federal OSHA

OSHA stands for the Occupational Safety and Health Administration, a branch of the U. S. Department of Labor. OSHA was created by an Act of Congress, the Occupational Safety and Health Act of 1970 (PL 91-596), to provide for adopting and enforcing worker safety and health standards throughout the United States.

What is CAL/OSHA

In passing the California Occupational Safety and Health Act, the State of California responded to a provision in the Federal Act which allows for state-run programs in job safety and health instead of federally-run programs. According to the Federal Act, all state programs must enforce standards which are at least as effective as federal standards and must cover public sector employees as well as private sector employees. Therefore, the California program, CAL/OSHA, covers city, county and state employees, and employees of most private corporations and businesses. To carry out this program, the state receives federal funds. In return, the state program must be responsive to federal law, federal guidelines and federal supervision.

Who is Covered by CAL/OSHA

Both public and private employees are covered by the Act, and it does not matter how few people are on the employer's payroll. However, certain employees are exempt from the Act's coverage, usually because they are already covered by other state or federal safety regulations. Thus, the Act applies to all workers [6303(a)]\* except:

- Federal employees
- Household domestic workers
- Coal miners
- Metal and non-metal miners
- Railway workers not employed in railway shops
- Some motor carrier drivers on the road
- Airline pilots
- Some maritime workers
- Pipeline transport workers
- Workers covered by Atomic Energy Commission regulations

---

\*References to specific sections of the California Act appear in brackets such as [6300(a)]. The basic reference for this new legislation is California Labor Code.

### How Job Safety and Health is Enforced

Under CAL/OSHA, the State Division of Industrial Safety is responsible for making sure that all places of employment are safe and in compliance with applicable health and safety standards [6307]. As part of this responsibility, the Division must prepare and distribute information on the prevention of occupational accidents and diseases. The Division must also provide occupational health and safety training programs and job safety and health consulting services upon request.

The Division of Industrial Safety also has broad investigatory powers to inspect workplaces for violations of safety and health standards and generally unsafe and unhealthful conditions. When violations are found, the Division must inform the employer in writing and require the employer to correct the problem. This process of finding and correcting violations is structured to allow employees and employers to present their respective views of the problem. And, to insure the employee's freedom to complain, the California Act includes provisions intended to protect the employee from employer retaliation for his/her exercise of employee rights under the Act.

Civil fines and criminal penalties in the California Law give the Division's enforcement powers their real bite. Although public employers are not subject to the civil fines provided in the Act, they may be prosecuted under the criminal penalty provisions [6423, 6425, 6426]. Because the criminal prosecutions must be pressed by local district attorneys who are often very busy, it may be necessary for employees or others to press the district attorney to prosecute any given case. To encourage and support such prosecutions, the California Law provides for a new Bureau of Investigations. This new Bureau is responsible for conducting special investigations and preparing cases for prosecution involving violations of standards and safety orders in which there has been a serious injury or death [6315].

It should be noted that the term "employer," as defined in the Act, includes every officer, management official and supervisor having direction or custody of any employment or other employee. Thus, when line supervisors or others in supervisory positions from foremen on upward become aware of a safety or health problem, they must take all reasonable steps to correct the problem or risk criminal prosecution should a serious injury or death occur [6423, 6425]. This means that any person who is in charge of other employees should take prompt action to eliminate job hazards as soon as he/she learns of them.

### How CAL/OSHA Relates to Unions

The California Occupational Health and Safety Act gives rights to individual employees. The Act also gives unions rights to file complaints and to be kept informed. Thus, your union or employee organization can be indispensable in assuring your rights to a safe and healthful workplace. Unions can and do develop health and safety policies which are addressed directly to their members' health and safety problems. Therefore, when you have a complaint, it is in your best interest to be aware of your union's policies. Your union representative can explain the union's policy to you.

Your union representative may have developed considerable expertise in using the procedures which CAL/OSHA requires you to follow. The union can help you file a complaint. Similarly, it can make sure that neither the California OSHA agency nor your employer undercuts your right to action and answers. The union can also protect your right to remain anonymous by having the union representative sign the complaint. The union may also exert direct pressure on the employer to correct work hazards.

In addition to CAL/OSHA protections, your union may have specifically provided for alternative ways to enforce safe and healthful working conditions. Some union contracts contain health and safety clauses which put the employer under a contractual duty to maintain a safe and healthy workplace. If these contracts also provide for grievance and arbitration procedures, the union may pursue your health and safety grievance through this channel. In fact, the union may have developed policies and procedures which deal more effectively with health and safety problems than CAL/OSHA. For this reason and others, you should be aware of any union policy in this area. In any event, the law says that a worker always has recourse to OSHA's procedures. In other words, you retain your rights to file a complaint under CAL/OSHA regardless of the fact that your complaint went through negotiated procedures.

Your union can also help protect you against any employer retaliation which results from the exercise of your rights to a safe and healthy job. For instance, if your employer discriminates against you because you complained about a safety hazard, the union can help you use the specific procedures that CAL/OSHA provides for preventing such retaliation. Or the union may have special procedures under the union contract for pursuing employee complaints about employer reprisals, such as dismissal or demotion. For more information, see the section in this Booklet entitled, "Protection of the Employee Against Retaliation."

If you are an employee of a public agency where collective bargaining is not fully developed, your employee organization may not have a grievance or arbitration procedure. Nonetheless, health and safety issues are still subject to the "meet and confer" procedures which exist in the public sector.

#### DECIDING IF A SAFETY OR HEALTH HAZARD EXISTS

##### Safety Hazards

A safety hazard can be defined as a situation in which you or your fellow employees may be injured or killed. Some examples of common safety hazards are faulty electrical wiring, platforms with no railings, unguarded gears, belts and pulleys, careless use of flammable solvents, power grinding without eye protection, and countless other job situations where people may be electrocuted, burned, cut, crushed, blinded, or otherwise hurt. Safety standards prescribe job conditions designed to prevent these accidents. While you should be familiar with the safety standards for your job, you should not worry about being a safety expert. If you feel that safety standards are being violated or that your job is somehow unsafe, you should discuss the problem with your supervisor and/or union representative or file a complaint as described later in this Booklet. Your responsibility is to make your questions known so that experts representing your employer, your union, or CAL/OSHA can decide if there is a problem.

##### Health Hazards

A health hazard is usually more complicated than a safety hazard, but can be defined as a job situation where you or your fellow employees can be poisoned or made sick by chemicals or other harmful agents such as heat, noise, x-rays, microwaves, dust, fumes or gases. Examples of some job-caused illnesses are headaches from automobile exhaust, skin rashes from use of solvents, lung disease from inhalation of dust, hearing loss from loud noise, eye damage from arc welding, and cancer from contact with certain chemicals. Job health hazards are more difficult to evaluate than safety problems. Therefore, do not hesitate to ask for help. CAL/OSHA includes health standards designed to protect worker health, so if you or your fellow employees feel that something on your job is damaging your health, talk to your supervisor and/or union representative, or file a complaint.

The U. S. Congress recognized that some safety and health problems were too complicated to be solved by routine enforcement programs such as provided by OSHA. To cope with complex problems, particularly with regard to employee health, and to

carry out research, Congress created a new agency known as the National Institute of Occupational Safety and Health (NIOSH). For a description of NIOSH and how it may be used, see the section in this Booklet entitled, "Safety and Health Research."

#### How Safety and Health Standards are Established

California has a set of occupational safety and health standards which set minimum conditions the employer must maintain in order to have a safe workplace. Any violation of these standards is presumed to create a hazard and must be cited in writing when noted by inspectors from the Division of Industrial Safety.

New or revised standards will be adopted by the California Occupational Safety and Health Standards Board, a new agency created by CAL/OSHA. This is the only state agency authorized to adopt occupational safety and health standards enforceable under the California Act. All meetings of this Board are open to the public. Furthermore, at each meeting, time must be provided for interested people such as affected employees and employee representatives to propose new or revised standards. The Board must report its decisions of these proposed new or revised standards within six months [142.2]. Concerned employees can use this opportunity to work for needed standards where standards are either inadequate or non-existent.

Newspapers in San Francisco, Sacramento, Fresno, Los Angeles and San Diego will carry notices of all Board meetings. Written notice of Board meetings can be received by sending a written request in a letter to the Occupational Safety and Health Standards Board, California Department of Industrial Relations, 1006 Fourth Street, Sacramento, California 95814.

#### Getting Copies of CAL/OSHA Standards

California's occupational safety and health standards are published under Title 8, California Administrative Code and are known as the California Safety Orders. Of this group of orders, two sets, the General Industry and the Construction Safety Orders, include the standards and regulations that apply to most places of employment in the state. Copies may be obtained by writing to the State of California, Documents Section, P.O. Box 20191, Sacramento, California 95820. See the Appendix in the back of this Booklet for a price list of all of the currently available safety orders.

#### Federal OSHA Standards

Under the Federal Law (PL 91-596), California's standards must be as effective as the nationwide standards published by the United States Department of Labor, Occupational Safety and Health Administration (OSHA). A copy of these federal

standards may be obtained at no cost from the United States Department of Labor, Occupational Safety and Health Administration, 450 Golden Gate Avenue, Box 36017, San Francisco, California 94102.

### HOW HAZARDS ARE INVESTIGATED UNDER CAL/OSHA

#### The Routine Inspection

An inspector can visit a place of employment at the Division of Industrial Safety's own initiative to make a routine health and safety inspection [6309]. Even though this is a routine inspection, the inspector must inform the employer of his arrival and must seek out an employee representative to accompany the inspector during the inspection process. Where there is no authorized employee representative, the inspector must consult privately with a reasonable number of employees so that they have the chance to tell the inspector about health and safety problems [6314(d)]. Also, any employee, employee representative or employer has the right to talk privately to the inspector during the course of any inspection or investigation [6314(d)].

In addition, the Division must investigate the causes of any on-the-job fatality of one worker or any serious injury to five or more workers [6313(a)]. The U.S. Department of Labor will also continue to probe catastrophes and fatalities for purposes of accident analyses.

But don't wait for a routine inspection or a serious accident if you feel that there are health or safety problems on your job. Talk to your supervisor or union representative, or file a complaint or telephone directly to the Division. Because of the great many places of employment and the limited number of inspectors, the chance of an inspector visiting your job on a routine inspection is about once in ten to twenty years.

#### Inspection Resulting from an Employee Complaint

California's Occupational Safety and Health Act gives you the right as an employee to bring a CAL/OSHA inspector to your job by making an official complaint directly to the Division of Industrial Safety. You do not have to talk to anyone before making the complaint, and the Division by law must not reveal your name to anyone unless you specifically request otherwise [6309]. In some situations, however, speaking to a supervisor or a union representative may solve the problem. Employers who are interested in the health and safety of employees will voluntarily correct problems without any need for intervention by CAL/OSHA inspectors. In addition, unions are becoming more and more concerned with health and safety and are changing their

contracts with employers to provide procedures for better resolution of job health and safety problems. Unions also have the right to use the complaint procedure to bring CAL/OSHA inspectors to places of employment within their jurisdictions. Thus, the employee has several alternatives when faced with a particular health or safety problem and should use the approach which fits his/her circumstances best.

#### Refusal to Work on Dangerous Jobs

There is one more special method for controlling extreme danger only. CAL/OSHA says that any employee may refuse to work in a situation where official safety or health standards are violated, if such a violation creates a real and apparent hazard to the employee or his fellow employees [6311]. In other words, under California law, employees may refuse to work on jobs where such work would clearly expose them or their workmates to extreme danger to life or limb. In these cases, the employer is forbidden from laying off or otherwise discriminating against employees who refuse to work [6311].

It is important to recognize that refusal to work is an unusual remedy that should only be used when actually necessary. Additionally, the law is new and untested in this area and refusal to work where the danger is not clear could result in layoffs or loss of wages. Therefore, if you must use this section of the law to protect yourself, inform your supervisor and immediately call the nearest office of the State Division of Industrial Safety (a list of telephone numbers is included in the back of this Booklet). Also, contact your union, take photographs if possible, note the names of witnesses and send follow-up letters to confirm your telephone calls to the Division of Industrial Safety and others.

If you are laid off or discharged for refusal to work as described here, CAL/OSHA can protect you against such action, but only if you act within 10 days of the alleged discriminatory action. Within 10 days you must notify your employer that you intend to file a complaint with the State Labor Commissioner. Then within 30 days of the discriminatory action, you must actually file the complaint with the Labor Commissioner. A list of addresses and phone numbers of the offices of the State Labor Commissioner are listed in the Appendix of this Booklet. Upon receiving your complaint, the Division of Labor Standards Enforcement must investigate. If Sections 6310 or 6311 of the California Act have been violated, the Division of Labor Standards Enforcement must bring appropriate court action at no cost to the employee to bring about rehiring or reinstatement of the employee to his former position with back pay [6312].

Additionally, your union will be able to help you cope with these problems by assisting with filing complaints representing you as provided in their labor-management agreement. For a more complete discussion of protection against retaliation see the section in this Booklet entitled, "Protection of the Employee Against Retaliation."

## HOW TO USE THE COMPLAINT PROCEDURE

### Filing a Complaint

Filing a complaint about a job safety or health problem is simple. Just write a letter or send a filled-out complaint form to the Division of Industrial Safety's regional office nearest you. If the situation is so bad that someone is likely to be injured or killed before you can write a letter or fill out a form, immediately telephone the nearest office of the Division of Industrial Safety. The addresses and phone numbers of these offices throughout California are listed in the Appendix at the end of this Booklet. If you do telephone the Division regarding a job hazard, you should follow up the phone call with a brief complaint letter or form so that your complaint is documented in writing. The written complaint IS important, because it can be used to protect you against retaliation. It also assures that you will be kept informed of the Division's findings. These two points are covered in more detail later in this Booklet.

The letter you write or the complaint form that you fill out should contain sufficient detail to enable the Division to determine that the situation calls for an inspection. But, you are not expected to be an expert, so state the problem in your own words without exaggerating the condition, as there are penalties for knowing falsification [6426]. A sample complaint letter and complaint form are provided for you in the Appendix.

### Your Right to Remain Anonymous

You have a right to remain anonymous when making the complaint [6309]. Recent Amendments to this provision restricts the Division from disclosing your name, unless you specifically request otherwise. You should retain a copy of the complaint letter or form for your files.

An employee representative such as a union business agent or union official also has the right under CAL/OSHA to file a complaint and to request a health or safety inspection [6309]. In some cases, it may be best for the employee to avoid any possibility of trouble with his employer over health and safety matters by simply asking a person from the employee organization or union to sign the complaint and to follow up on it.

### Getting Complaint Forms

CAL-OSHA Complaint Forms may be obtained from any of the Division of Industrial Safety offices. For specific offices in your area, refer to the Appendix. A complaint form simplifies the process, yet insures that pertinent information is included.

Additionally, a second copy of the form can be retained to provide a written record for the person or employee group making the complaint. (See Appendix for copy of CAL-OSHA Complaint Form.)

Federal OSHA recognized the need for such forms and has distributed them widely as part of its nationwide program. In the absence of state complaint forms, Federal OSHA has indicated that their forms may be used to file CAL/OSHA complaints. These federal forms are available from the United States Department of Labor, Occupational Safety and Health Administration, 450 Golden Gate Avenue, Box 36017, San Francisco, California 94102. Complaints may be sent to this address as well as the offices of the State Division of Industrial Safety. However, current policy is that any complaints sent to the federal address will be forwarded to the state program for action, but a federal inspector will accompany the state inspector during the investigation. (See Appendix for copy of federal complaint form.)

#### The Importance of a Written Complaint

Remember, there is nothing special about a complaint form--it's just an easy way for you to get the necessary facts on a piece of paper. So if you can't get a blank complaint form, write a complaint letter to the Division. You do not have to be an expert in safety or health to write a complaint letter. Follow the example letter shown in the Appendix, using your own words to describe the problem or problems.

You can also telephone a complaint to the Division. Telephoned complaints, however, are not recommended except in emergencies for the following reasons:

1. You should have a written record of the complaint, particularly if you represent other employees.
2. Without a written complaint in their files, the Division will not be able to keep you informed of the results of their inspection.
3. If your employer discriminates against you for filing a complaint, a written record will help the Labor Commissioner to protect you. If there is no record that you complained, it might be difficult for you to show that your discrimination problem was the result of a job safety complaint.
4. If the employer fails to correct the unsafe condition and someone is subsequently injured, the written record may be valuable in assuring the victim proper compensation.

If you do telephone the Division, be sure to: (1) follow the phone call with a confirming complaint or letter and (2) keep a copy for your file.

### What Happens After the Complaint is Filed

Within three days from the Division's receipt of your complaint, they must respond [6309]. However, this provision applies only to complaints which allege "serious" violations. For "nonserious" violations, the Division may take up to 14 days to respond. Either an inspector will visit the workplace with no advance warning, or you will receive a letter explaining that your complaint does not have a reasonable basis for requiring an inspection. Or, the Division may decline to inspect because they determined that you filed the complaint for harassment purposes only. In any event, if there is no inspection, you must be given reasons in writing by the Division [6309]. If you do not get an inspection in response to your valid complaint, see the section in this Booklet entitled, "What if the State Program Fails to Act."

### What About Advance Warning of the Inspection

The law provides special penalties of up to six months in jail and/or \$1,000 fine to any person who gives advance notice of any inspection [6321]. This is to prevent the employer from temporarily discontinuing hazardous operations just prior to the official inspection. The Chief of the Division of Industrial Safety may authorize advance warning of an inspection in special cases, such as an extreme hazard situation.

## THE INSPECTION TOUR

### What to Do During the Inspection

An inspector may come to a workplace on a routine inspection or in response to an employee complaint. In either case, the procedures involved are the same. Upon arrival, the inspector will show his credentials to the employer; this allows the inspector free access to any workplace. The employer may have a management representative accompany the inspector. Employees also have the right to have a representative accompany the inspector [6314]. This is an important employee right which should be utilized.

The law says the inspector is not to be hampered or obstructed in his/her inspection. Any delays in the inspection due to problems over choosing the employee representative could be construed as hampering the inspector. In this event, the inspector may proceed without an employee representative. If there is no employee representative the inspector must interview employees [6314]. The interviewing, however, is probably less effective than an employee representative accompanying the inspector, because the employees chosen at random by the inspector are less likely to know about all the safety

problems throughout the entire workplace than a knowledgeable employee representative.

Therefore, it is important for employees to select a concerned, well-trained representative and to make sure that everyone knows his/her identity to avoid confusion when the inspector arrives. This means that if there are different employee organizations in one location, employees should still agree on who is the employee representative for purposes of accompanying the inspector. It is also important to be sure there is an authorized representative for each shift and that back-up representatives are chosen in case the first representative is absent. Notifying management of the name(s) of employee representative(s) and back-up(s) will help prevent confusion during an inspection.

A problem can arise if the inspection covers restricted areas for which the employee representative lacks clearance. In this event, the employee representative should wait outside the restricted area and rejoin the inspector when he returns to unrestricted areas. Within the restricted area, the inspector can interview employees alone or have another employee representative who has the necessary clearance accompany him/her.

During the inspection, every employee has the right to discuss health and safety problems privately with the inspector as he/she passes through the workplace [6314(d)]. If an employee is concerned about an unsafe job condition, the employee should either inform the employee representative or tell the inspector about the problem. An employee's statements have more force if he/she can pinpoint the violation of a specific standard. But employees should also discuss generally unsafe conditions with the inspector.

### Tagging

During the inspection, if the inspector finds a situation of extreme hazard, the inspector must prohibit entry to the affected area and/or use of the dangerous equipment. If this happens, the inspector will post a conspicuous notice to that effect. From then on, it is illegal to enter the dangerous area or use the equipment. It is also illegal for anyone to remove the posted notice or for the employer to ask an employee to enter the dangerous area or to use the unsafe equipment without permission from the Division [6325, 6326]. Such permission will be given only to repair or eliminate the dangerous condition.

### Closing Conferences

After completion of the inspection, the inspector is obligated to have separate closing conferences with both the representative of the employer and the representative of employees. The conference with the employer representative will be held automatically whether the employer requests the meeting or not. However, the meeting with the representative of employees will not be held unless it is requested by the representative of employees. In some cases a joint closing conference is possible if the employer agrees. This opportunity for a closing conference should be utilized to insure that the inspector has noted all of the employee complaints during the tour through the place of employment. To accomplish this objective, the employee representative should ask for a short verbal review of all of the specific hazards and alleged violations found by the inspector. During this discussion, the employee representative should make written notes so that he can inform affected employees and so that he can check later to insure the hazards are actually abated.

WHAT HAPPENS AFTER THE INSPECTION

The Alternatives

After the inspector has been to the workplace, a number of alternatives exist, depending on the problems found. If the Division believes that the employer violated a safety or health standard, the Division must issue a citation with reasonable promptness [6317]. Additionally, the Division may order the plant or process immediately closed in the case of imminent danger to employees, or it may seek criminal penalties against the employer, depending upon the seriousness of the violation [6325, 6423]. Private employers may also be fined for violating safety or health standards or for failing to correct these violations within the period fixed by the Division [6427, 6428, 6429, 6430].

The Citation

A written citation will be used by the Division when they find a health or safety violation. It is a piece of paper informing the employer and employees of the specific violations and prescribing the time period fixed by the Division for correcting the violations (this time period is called the abatement period). The citation can be issued any time within six months, but it should be issued with reasonable promptness [6317]. The size of the fine in dollars and the length of the abatement period will vary according to the seriousness of the violations found and the ease or difficulty of correction. The important point to remember is the Division must issue a citation whenever a violation of a safety or health standard is discovered. The Division must conduct an informal review of any refusal by a CAL/OSHA inspector to issue a citation for an alleged violation and must furnish a written statement of the findings of this review upon the request of the complaining employee or his representative [6309].

Once a citation is issued, the employer must post it for employees to see for three days or until the violation is corrected, whichever time period is longer [6318]. The objective of a citation is to get the employer to eliminate the health and safety violations within a reasonable time. If the citation is disobeyed and the violation is not corrected within the prescribed abatement period, the employee should notify the Division in writing using a complaint form or a letter. For extreme hazard situations, telephone the Division directly. The Division should send someone out to reinspect. Here, too, employee actions are protected against retaliation [6309, 6310].

### APPEALS AGAINST CITATIONS

Employers and/or employees can appeal citations to the CAL/OSHA Appeals Board within fifteen days of the receipt of the citation [6600, 6602]. Copies of the official forms for filing employer and employee appeals are included in the appendix of this booklet. If there is no appeal within the fifteen day period, the citation becomes a final order and is no longer appealable.

Employees have a right to participate as parties in an appeal hearing, regardless of whether the employees or the employer filed the appeal [6602, 6603]. Participation in such hearings is protected by the anti-retaliation provisions of the act [6310]. After the Appeals Board gives its decision in the appeal, any affected person can petition for reconsideration of that decision if the petition is within 30 days of the Board's decision [6614].

### INFORMATION PROVIDED TO THE PERSON WHO COMPLAINS

The Division is charged by law with keeping accurate records of all complaints, verbal or written [6309]. This section of the law also provides that the complainant shall be informed of any action taken in regard to the complaint and the reasons for such actions.

If you complain to the Division about an unsafe or unhealthy work situation, you should receive a written reply as to the action taken (or not taken) by the Division. If you do not hear from the Division in writing in a reasonable length of time after sending in a complaint, telephone the nearest Division Office and ask why you have not been kept informed. If, after this phone call, you still do not receive a reply, notify Federal OSHA as described in this Booklet under the section, "What if the State Program Fails to Act." Of course, if the problem involves extreme hazard, don't wait; telephone the Division immediately. If the Division does not respond, call Federal OSHA at (415) 556-0536 or (213) 432-3434.

### PROTECTION OF THE EMPLOYEE AGAINST RETALIATION

#### Protection Provided by CAL/OSHA

Fear of employer reprisal can deter employees from exercising their rights to have a safe workplace. Therefore the California Occupational Health and Safety Act has a special section intended to protect employees against job loss or financial penalty who exercise their rights under all other sections of the law [6309, 6310, 6311, 6312]. To the extent that laws can protect, the Act forbids employers from firing or otherwise discriminating against any employee for sending complaints to

the Division or refusing to work in violation of safety orders [6310, 6311]. If the employer does not respect these rights, the employee is entitled to reinstatement and reimbursement for lost wages and work benefits caused by the employer. If an employee is fired or discriminated against for pursuing his/her rights under the California Act, he/she should notify his/her employer of intention to file a claim within 10 days of the alleged discriminatory action and submit a complaint to the Labor Commissioner, Division of Labor Standards Enforcement, California Department of Industrial Relations, 455 Golden Gate Avenue, San Francisco, California 94102. (A statewide list of Labor Commissioner's branch offices and a complaint form appears in the Appendix.) The complaint form should describe the problem and should be mailed within 30 days of the alleged discriminatory action. Within 30 days of receiving your complaint, the Division of Labor Standards Enforcement must review the facts of your case, notify you and your employer of its findings, and where necessary, initiate appropriate court action to enforce its decision [6312].

#### Protection Provided by Unions

Unions have additional channels to help prevent retaliation against employees. For instance, if you are covered by a union contract that bars employee dismissal except for "just cause," the union can take action to protect your rights to complain against hazardous working conditions or to refuse to work in violation of CAL/OSHA standards. Generally, the union's course of action will involve the use of grievance and arbitration procedures provided in the labor-management agreement. And under CAL/OSHA, an employer who refuses to abide by a grievance or arbitration decision ordering back pay or other relief for employer retaliation could be convicted of a misdemeanor [6309]. Additional protection in connection with union activity is provided by the National Labor Relations Act in Sections 8(a)(1) and 8(a)(3). Moreover, refusal to work because of abnormally dangerous conditions cannot be deemed an illegal strike under the Labor-Management Relations Act Section 502.

Note that going through arbitration and/or filing a complaint under the sections of the National Labor Relations Act mentioned above will take much more time than the 30 days permitted by CAL/OSHA for complaints to the Labor Commissioner. Therefore, if you use the union-related procedure, you may also wish to simultaneously file a complaint with the Labor Commissioner in order to meet those deadlines and to preserve your access to the CAL/OSHA protection provided by the Labor Commissioner's Office. The union can also help you file this complaint with the Labor Commissioner.

Remember that the anti-retaliation sections of the laws mentioned here should be used with good judgement and caution as they have not been thoroughly tested in the courts.

Another form of protection of the individual employee against retaliation provided by unions and other employee groups is that these groups can file CAL/OSHA complaints [6309]. By asking a union or employee group representative to file a health or safety complaint for you, your name can be completely left out of the CAL/OSHA complaint process. In this way the chances of misunderstanding between you and your employer can be almost totally avoided.

#### WHAT IF THE STATE PROGRAM FAILS TO ACT

The Federal Occupational Safety and Health Act of 1970 (PL 91-596) placed all authority for safety and health in places of employment in the U. S. Government. But under this Act, states such as California, were delegated this authority over workplaces in return for agreeing to carry out an occupational safety and health program which conformed with minimum federal guidelines.

If in your opinion the state program fails to measure up to standard by failing to respond to your complaint, failing to issue citations for known violations, failing to enforce health and safety standards, failing to follow procedures prescribed by CAL/OSHA, or failing to protect your rights against discrimination, promptly notify the Federal OSHA Office. Federal OSHA has prepared special forms for this purpose (see Appendix) and asks that all employees assist them in supervising state programs by sending in complaint forms or letters of complaint whenever deficiencies in the State Programs are noted. These forms (termed CASPA Forms) may be obtained from the United States Department of Labor, Occupational Health and Safety Administration, 450 Golden Gate Avenue, Box 36017, San Francisco, California 94102. If you cannot obtain a complaint form, simply write a letter stating the problem to the above address. Begin your letter by saying, "This is a complaint against State OSHA program administration," or more simply, "This is a CASPA." The right to make a CASPA complaint and other employee rights appear in both Spanish and English on all CAL/OSHA information posters. These posters must be prominently posted in all places of employment in California [6328].

#### YOUR RESPONSIBILITIES AS AN EMPLOYEE

The law charges you, as an employee, with certain responsibilities for your own health and that of your fellow employees [6325, 6326]. These responsibilities are:

a) You must not deface or remove notices posted by the Division to prohibit use of an unsafe machine or to prohibit entry to an unsafe area [6325].

b) You must obey notices prohibiting the use of unsafe equipment or entry to unsafe areas which are posted by the Division. Failure to obey such a notice or to deface, destroy or remove it without permission from the Division is a misdemeanor punishable by a fine or up to a year in the county jail [6326].

c) You must not remove, displace, damage, destroy or carry off any safety device, safeguard, notice or warning furnished for use in any place of employment [6406(a)].

d) You must not interfere with the use of any item, mentioned in (c) above, by any other person [6406(b)].

e) You must not interfere with the use of any method or process adopted for the protection of any employee including yourself [6406(c)].

f) You must not fail or neglect to do everything reasonably necessary to protect the life, safety and health of employees [6406(d)].

g) You must comply with all occupational safety and health standards, rules, regulations and orders which are applicable to your actions and conduct on the job [6407].

#### THE EMPLOYER'S DUTY TO PROVIDE INFORMATION TO YOU

To fulfill their duty of furnishing a safe and healthful workplace, all employers covered by the Act are required to provide certain information to their employees. The information you, the employees, are entitled to includes:

a) Information regarding protections and obligations of employees under the Occupational Safety and Health Act [6328, 6408(a)]. This information must be posted in the workplace in English and in Spanish.

b) The posting of citations at or near the place of the violation [6408(b)].

c) The opportunity to observe monitoring or measurement of employee exposure to toxic chemicals or harmful physical agents [142.3, 6408(c)].

d) Access to accurate records of employee exposure to potentially toxic materials or harmful physical agents [6408(d)].

e) Notification to any employee who has been or is exposed to excessive (measured against the published standards) toxic materials or harmful physical agents, and notification to that employee of the corrective action being taken [6408(e)].

f) Posting of labels or other forms of warning to ensure that employees are apprised of all hazards to which they are exposed, relevant symptoms, appropriate emergency treatment, and proper precautions [142.3(b)].

g) Results of any medical examinations or tests made at the employer's expense in connection with occupational health and/or safety [142.3(c)].

If an employer is not giving you or your authorized representative access to this information, file a written complaint to the Division.

#### VARIANCES

An employer can request an order for a variance from a health and/or safety standard. The variance means that a specific standard does not apply to that employer, and cannot be enforced against him/her. The variance should provide for equal or better protection than the original standard. A variance may in fact reduce the level of worker protection if all of the facts are not considered before it is granted. Therefore, employees and their representatives should be aware of and participate in variance proceedings.

#### Temporary Variances (Granted by the Division of Industrial Safety)

An employer who establishes that he/she cannot comply with a standard by its effective date, and who shows the Division that all available steps to protect the employees against the hazard covered by the standard are being taken, and who offers a plan to comply with the standard as quickly as practicable may be granted a temporary variance [6450, 6451]. A variance may also be granted to participate in a Division-approved experiment [6452].

For any temporary variance request, the employer must certify to the Division that he/she has informed the employees of the application for the variance by giving the employees' authorized representative a copy of it and making it available to all employees [6451(e)]. This information to employees must also tell them of their right to petition the Division for a hearing on the variance [6451(e)].

If an employee or employee organization opposes the variance, they should immediately write to the Division and request a hearing on the issue [6451(e), 6455]. The hearings must give any affected person the opportunity to submit facts or arguments [6453]. The hearing can be informal, and may only involve a letter in which employees set forth their reasons for opposing the variance [6453].

Once the decision on the variance has been made, an affected person, including the employer, can appeal [6455]. The appeal is not to the Division of Industrial Safety but to the Occupational Safety and Health Standards Board. If you wish to

appeal a Board decision, you must file within 15 working days of the employer's receipt of the notice granting or denying the variance [6455]. The Standards Board decision on a given appeal must be in writing. This decision is final, except that it may be reviewed by a court [6457].

If an employer requests an interim order for a temporary variance the Division may issue it pending a hearing on the application for a temporary variance. This depends on the employer's showing that the place of employment will be safe for employees in this interim time. If you feel it is not safe, contact the Division and urge them to rescind this interim order.

Once a temporary order approving a variance comes down, it can only be effective for as long as the employer needs it in order to comply with an official standard-- and in any event, no longer than one year. A temporary variance order can be renewed twice, each for additional 180-day periods [6450(b)].

#### Permanent Variances (Granted by the Occupational Safety and Health Standards Board)

Your employer may also request a permanent variance from a health and/or safety standard. To do this, the employer must present an alternate program, method, practice, means, device or process to the Board which will provide employee safety equal or superior to the level set by the standard [143(a)]. The employer must show this by a preponderance of the evidence. The Board can also grant a permanent variance when it is necessary for an experimental program aimed at improving health and safety for workers [143(c)].

The Board will conduct hearings on a permanent variance request after employees have been notified and given a chance to appear [143.1]. The Board's decision is final, except that it can be reviewed by a court [143.1]. Moreover, an employer or the employees can apply to the Board for a modification or revocation of the permanent variance; the Division or Board can also revoke or modify it on their own motion [143(d)].

#### CONSTRUCTION PERMIT REQUIREMENTS

For three types of hazardous work, all private employers, except public utilities, are required to obtain a permit from the Division before operations begin [6500]. These are:

a) Construction of trenches or excavations which are 5 feet or deeper and into which a person is required to descend.

b) The construction of any building, structure, falsework, or scaffolding more than 3 stories high.

c) The demolition of any building, structure, falsework, or scaffolding more than 3 stories high.

A copy of the permit must be posted for the information of employees [6504].

The Division may require a safety conference prior to the start of actual work [6502]. This conference must include representatives of the owner or contracting agency, the contractor, the employer, employees and employee representatives. The employer's safety program and the means and practices he intends to use in providing a safe place of employment must be discussed in the conference [6503].

The Division may revoke this permit for good cause at any time [6505].

### SAFETY AND HEALTH RESEARCH

#### NIOSH

The United States Congress, in passing the Occupational Safety and Health Act of 1970, recognized that continuing research on the harmful effects of chemicals, industrial processes and all kinds of jobs would be required in order to establish new standards and to protect working people from new hazards. To carry out this research work throughout the United States, Congress created the National Institute for Occupational Safety and Health, better known as NIOSH. This agency does not carry out enforcement, but it is authorized to enter any place of employment to carry out health hazard evaluations and other work relative to determining whether any chemical substance or physical agent such as heat or microwaves is harmful to employees.

NIOSH has organized its services as follows:

1. Hazard evaluations at the worksite. Upon request, NIOSH scientists will perform complete evaluations of working conditions by analyzing chemical samples measuring physical agents and examining the health of workers. Part of this service includes the development of non-hazardous work practices and processes for hazard control.

2. Technical information services. NIOSH maintains a technical information center. They will provide written answers to questions from employees, unions, and employers on safety or health hazards, such as toxicity of particular chemicals, use of respiratory protective equipment, methods for chemical analyses, etc.

3. Accident prevention services. Direct technical assistance is available for controlling on-the-job injuries resulting from accidents.

4. Industrial hygiene services. These services include the identification and evaluation of special health-related problems in the workplace and recommendations for control measures.

5. Medical services. NIOSH will assist in solving occupational medical and nursing problems. This includes determining medical and nursing needs for specific places of employment.

You can initiate research along the lines described above in your place of employment by filling out the NIOSH "Request for Health Hazard Evaluation" shown in the Appendix of this Booklet. Copies of this form may be obtained from: NIOSH, United States DHEW Region IX, 50 Fulton Street, Room 254, Federal Office Building, San Francisco, California 94102, Telephone: (415) 556-3781.

**APPENDIX**

OFFICES OF THE DIVISION OF INDUSTRIAL SAFETY

Main Offices

SAN FRANCISCO . . . . . 455 Golden Gate Ave. 94102 415-557-1946  
Los Angeles . . . . . 3460 Wilshire Blvd. 90010 213-381-1332

Regional Offices

Fresno . . . . . 2550 Mariposa St. 93721 209-488-5302  
Los Angeles . . . . . 3460 Wilshire Blvd. 90010 213-381-5695  
Los Angeles (North) . . . . . 8155 Van Nuys Blvd. 91402 213-782-1800  
Sacramento . . . . . 2422 Arden Way 95825 916-445-5818  
San Diego . . . . . 1309 State St. 92101 714-236-7325  
San Francisco . . . . . 1540 Market St. 94102 415-557-1677

District Offices

Bakersfield . . . . . 225 Chester Ave. 93301 805-324-6437  
Concord . . . . . 1070 Concord Ave. 94520 415-676-5333  
El Monte . . . . . 3415 Fletcher Ave. 91731 213-572-6960  
Long Beach . . . . . 230 E. Fourth St. 90802 213-432-8443  
Los Angeles . . . . . 3460 Wilshire Blvd. 90010 213-381-3861  
Modesto . . . . . 1800 Coffee Rd. 95355 209-529-7751  
Oakland . . . . . 1111 Jackson St. 94607 415-464-0660  
Panorama City . . . . . 8155 Van Nuys Blvd. 91402 213-782-1800  
Redding . . . . . 1421 Court St. 96001 916-246-6571  
Salinas . . . . . 21 W. Laurel Dr. 93902 408-449-7235  
San Bernardino . . . . . 303 W. Third St. 92401 714-383-4321  
San Jose . . . . . 888 N. First St. 95112 408-277-1260  
San Mateo . . . . . 2555 Flores St. 94403 415-573-1718  
Santa Ana . . . . . 28 Civic Center Plaza 92701 714-558-4141  
Santa Barbara . . . . . 3704 State St. 93105 805-682-2578  
Santa Rosa . . . . . 750 Mendocino Ave. 95401 707-542-8802  
Stockton . . . . . 31 E. Channel St. 95202 209-948-7762  
Vernon . . . . . 2833 Leonis Blvd. 90058 213-589-5848

Field Offices

Chico . . . . . 555 Rio Linda Ave. 95926 916-345-7131  
Eureka . . . . . 619 Second St. 95501 707-442-5748  
Ukiah . . . . . 264 E. Smith St. 95482 707-462-8850  
Ventura . . . . . 3418 Loma Vista Rd. 93003 805-642-1475

NOTE: The offices listed on this page will handle safety and health complaints.

OFFICES OF THE STATE LABOR COMMISSIONER

SAN FRANCISCO - Headquarters Office 415-557-3827  
455 Golden Gate Ave., P. O. Box 603 415-557-3200  
San Francisco, CA 94101

District Offices

Bakersfield - 225 Chester Avenue (93301) . . . . . 805-327-4827  
Burlingame - 100 El Camino (94010) . . . . . 415-342-7235  
ElCentro - 380 N. Eighth Street, Suite 2 (92243) . . . . . 714-353-0585  
Eureka - 619 Second Street (95501) . . . . . 707-442-5748  
Fresno - 2550 Mariposa Street, Room 4092 (93721) . . . . . 209-488-5144  
Inglewood - 520 N. La Brea Avenue (90302) . . . . . 213-674-6522  
Long Beach - 230 E. Fourth Street (90812) . . . . . 213-590-5048  
Los Angeles - 107 S. Broadway, Room 5015 (90012) . . . . . 213-620-2486  
213-620-2100  
Oakland - 1111 Jackson Street, Room 3062 (94607) . . . . . 415-464-1353  
Pomona - 436 West Fourth Street (91766) . . . . . 714-623-4306  
Redding - 2115 Akard Avenue (96001) . . . . . 916-246-6406  
Sacramento - 2422 Arden Way (95825) . . . . . 916-445-8478  
Salinas - 21 West Laurel Drive, Suite 1 (93901) . . . . . 408-449-5467  
San Bernardino - 303 West Third Street (92401) . . . . . 714-383-4339  
714-383-4333  
San Diego - 1350 Front Street, Room 3064 (92101) . . . . . 714-236-7334  
San Jose - 888 North First Street (95112) . . . . . 408-277-1265  
Santa Ana - 1624 West 19th Street (92706) . . . . . 714-558-4115  
Santa Barbara - 411 East Canon Perdido Street (93101) . . . . . 805-963-1438  
Santa Rosa - 725 Farmers Lane, Bldg. "B" (95405) . . . . . 707-546-6350  
Stockton - 31 East Channel Street (95202) . . . . . 209-948-7770  
Vallejo - 856 Tuolumme Street (94594) . . . . . 707-644-7755  
Van Nuys (Panorama City) - 8155 Van Nuys Blvd, Room 950, 213-782-3733  
(91402)

NOTE: The offices listed on this page will handle cases of employer  
retaliation against employees who make safety or health complaints.

EXAMPLE - LETTER OF COMPLAINT

Chief  
California Division of Industrial Safety  
455 Golden Gate Avenue  
San Francisco, CA 94102

Dear Sir or Madam:

This letter is a formal request for an inspection with regard to safety and health hazards at the Blank City Municipal Shops located at 000 Industrial Drive, Blank City, CA.

Problems are as follows:

1. Unguarded belts on machinery.
2. Frayed electrical wiring on portable tools.
3. Poor housekeeping - fire hazard.
4. High noise levels on woodworking machinery.
5. Paint spray mist in paint shop.
6. What is the hazard from the solvent used to strip paint off of old desks? Men also use this to wash their hands.
7. Air is full of dust in the sandblasting department.
8. People who work in the auto body shop seem to have lots of skin rashes on their hands and legs.
9. Food from the vending machine in the locker room is often spoiled.
10. There are no drinking fountains.
11. Chemical odors from the duplicating machines worry the operators as to possible effects on their health.

Additional problems will be brought to the attention of your field representative during the walk-around inspection. The following are employee representatives who will be available to participate in the walk-around inspection:

Day shift - name, location, phone number  
Afternoon shift - name, location, phone number  
Night shift - name, location, phone number  
(Include the above list of names if appropriate)

In accordance with CAL/OSHA, I wish to receive copies of any notices, citations or findings resulting from the inspection and to be kept fully informed of your progress.

I do not want my name revealed to the employer. (This last sentence may be left out if you are not concerned about the employer learning your identity or if you are employee representative.)

Sincerely,

Sign your name here  
Insert mailing address here

NOTE: Keep a carbon copy for your files.

# COMPLAINT

STATE OF CALIFORNIA  
DEPARTMENT OF INDUSTRIAL RELATIONS  
DIVISION OF INDUSTRIAL SAFETY

CONFIDENTIAL

Complainant's Name _____ Type or Print	For Office Use Only	
	A. Region _____	Rec'd By _____ Date _____
	Telephone <input type="checkbox"/>	Written <input type="checkbox"/> Oral-In Person
	B. District _____	Rec'd/Reg: Date _____ Time _____
Position _____	C. District _____	Rec'd By _____ Date _____
Address _____ Street	Telephone <input type="checkbox"/>	Written <input type="checkbox"/> Oral-In Person _____
City _____	D. Complaint Log No. _____	
Zip Code _____		
Telephone _____	Area ( ) _____	Area ( ) _____
	Home	Office

Complaint (Check one)

- Employee  Representative of employees  
 If you are a representative of employees, state the name of your organization: \_\_\_\_\_
- Other (specify) \_\_\_\_\_

believes that a violation at the following place of employment of an occupational safety or health order exists which is a job safety or health hazard.

Does this hazard(s) immediately threaten death or serious physical harm?  Yes  No

E. Employer's Name \_\_\_\_\_

Address \_\_\_\_\_  
Street Telephone ( ) \_\_\_\_\_  
City \_\_\_\_\_ Zip code \_\_\_\_\_

- Kind of business \_\_\_\_\_
- Specify the particular building or worksite where the alleged violation is located, including address. \_\_\_\_\_
- Specify the name and phone number of employer's agent(s) in charge. \_\_\_\_\_
- Describe briefly the hazard which exists there including the approximate number of employees exposed to or threatened by such hazard. \_\_\_\_\_

(Continued on reverse side)

5. List by number and/or name the particular order(s) or code(s) which you claim has been violated, if known.

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6. (a) To your knowledge has this violation been considered previously by any Government agency? \_\_\_\_\_

(b) If so, please state the name of the agency \_\_\_\_\_

(c) and, the approximate date it was so considered. \_\_\_\_\_

7. (a) Is this complaint, or a complaint alleging a similar violation, being filed with any other Government agency? \_\_\_\_\_

(b) If so, give the name and address of each. \_\_\_\_\_

8. (a) To your knowledge, has this violation been the subject of any union/management grievance or have you (or anyone you know) otherwise called it to the attention of, or discussed it with, the employer or any representative thereof? \_\_\_\_\_

(b) If so, please give the results thereof, including any efforts by management to correct the violation. \_\_\_\_\_

9. Please indicate your desire:

I do not want my name revealed to the employer.

My name may be revealed to the employer.

*Continue Item 4 here, if additional space is needed.*

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(Date)

(Signature of Complainant)

Complaint handled by: \_\_\_\_\_ Date \_\_\_\_\_

Engineer Signature

U.S. DEPARTMENT OF LABOR  
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

Form Approved  
OMB No. 04471449

For Official Use Only		
Area	Date Received	Time
Region	Received By	

COMPLAINT

This form is provided for the assistance of any complainant and is not intended to constitute the exclusive means by which a complaint may be registered with the U.S. Department of Labor.

The undersigned (*check one*)

- Employee
- Representative of employees
- Other (*specify*) \_\_\_\_\_

believes that a violation at the following place of employment of an occupational safety or health standard exists which is a job safety or health hazard.

Does this hazard(s) immediately threaten death or serious physical harm?  Yes  No

Employer's Name \_\_\_\_\_

Address (Street \_\_\_\_\_ Telephone \_\_\_\_\_  
(City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

1. Kind of business \_\_\_\_\_
2. Specify the particular building or worksite where the alleged violation is located, including address. \_\_\_\_\_
3. Specify the name and phone number of employer's agent(s) in charge. \_\_\_\_\_
4. Describe briefly the hazard which exists there including the approximate number of employees exposed to or threatened by such hazard. \_\_\_\_\_

(Continue on reverse side if necessary)

Sec. 8(f)(1) of the Williams-Steiger Occupational Safety and Health Act, 29 U.S.C. 651, provides as follows: Any employees or representative of employees who believe that a violation of a safety or health standard exists that threatens physical harm, or that an imminent danger exists, may request an inspection by giving notice to the Secretary or his authorized representative of such violation or danger. Any such notice shall be reduced to writing, shall set forth with reasonable particularity the grounds for the notice, and shall be signed by the employees or representative of employees, and a copy shall be provided the employer or his agent no later than at the time of inspection, except that, upon request of the person giving such notice, his name and the names of individual employees referred to therein shall not appear in such copy or on any record published, released, or made available pursuant to subsection (g) of this section. If upon receipt of such notification the Secretary determines there are reasonable grounds to believe that such violation or danger exists, he shall make a special inspection in accordance with the provisions of this section as soon as practicable, to determine if such violation or danger exists. If the Secretary determines there are no reasonable grounds to believe that a violation or danger exists he shall notify the employees or representative of the employees in writing of such determination.

(Continued on reverse side)

5. List by number and/or name the particular standard (or standards) issued by the Department of Labor which you claim has been violated, if known.

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6. (a) To your knowledge has this violation been considered previously by any Government agency? \_\_\_\_\_

(b) If so, please state the name of the agency \_\_\_\_\_

(c) and, the approximate date it was so considered. \_\_\_\_\_

7. (a) Is this complaint, or a complaint alleging a similar violation, being filed with any other Government agency? \_\_\_\_\_

(b) If so, give the name and address of each. \_\_\_\_\_

8. (a) To your knowledge, has this violation been the subject of any union/management grievance or have you (or anyone you know) otherwise called it to the attention of, or discussed it with, the employer or any representative thereof? \_\_\_\_\_

(b) If so, please give the results thereof, including any efforts by management to correct the violation. \_\_\_\_\_

9. Please indicate your desire:

I do not want my name revealed to the employer.

My name may be revealed to the employer.

*Continue Item 4 here, if additional space is needed.*

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Signature \_\_\_\_\_ Date \_\_\_\_\_

Typed or Printed Name \_\_\_\_\_

If you are a representative of employees,  
state the name of your organization \_\_\_\_\_

Address (Street \_\_\_\_\_ Telephone \_\_\_\_\_  
( \_\_\_\_\_  
(City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

STATE OF CALIFORNIA-AGRICULTURE & SERVICES AGENCY-DEPARTMENT OF INDUSTRIAL RELATIONS  
DIVISION OF LABOR STANDARDS ENFORCEMENT  
STATE LABOR COMMISSIONER

FOR OFFICE USE ONLY	
TAKEN BY	CLAIM NO.
DATE	IWC NO.

### COMPLAINT

PLEASE PRINT ALL INFORMATION

1 YOUR NAME (EMPLOYEE OR COMPLAINANT)		SOCIAL SECURITY NUMBER	TAX EXEMPTIONS
YOUR ADDRESS - NUMBER AND STREET, APARTMENT OR SPACE NUMBER, CITY, ZIP CODE			YOUR PHONE NO.
KIND OF WORK DONE (OCCUPATION)	DATE OF HIRE	CALIFORNIA DRIVER'S LICENSE NO.	DATE OF BIRTH
WORK DONE AT - NUMBER AND STREET, CITY, COUNTY, ZIP CODE			WAS YOUR JOB UNION? <input type="checkbox"/> YES <input type="checkbox"/> NO

### AGAINST

2 NAME OF BUSINESS		EMPLOYER'S NAME	
ADDRESS OF EMPLOYER - NUMBER AND STREET, CITY, ZIP CODE			
TELEPHONE NUMBER	NAME OF PERSON IN CHARGE	TYPE OF BUSINESS	ESTIMATED NO. OF EMPLOYEES:

### WAGES AND WORK CONDITIONS

3 RATE OF PAY -- PER HOUR, DAY, WEEK, MONTH (SPECIFY) \$		TOTAL HOURS WORKED PER DAY: PER WEEK:	PAID OVERTIME? <input type="checkbox"/> YES <input type="checkbox"/> NO
WAS A RECORD OF HOURS WORKED KEPT? <input type="checkbox"/> YES <input type="checkbox"/> NO	CHARGED FOR SHORTAGES? <input type="checkbox"/> YES <input type="checkbox"/> NO	UNIFORM/TOOLS REQUIRED? <input type="checkbox"/> YES <input type="checkbox"/> NO	FURNISHED BY:
MEAL PERIOD LENGTH: <input type="checkbox"/> ON DUTY <input type="checkbox"/> OFF DUTY	REST PERIODS PERMITTED? <input type="checkbox"/> YES <input type="checkbox"/> NO	ARE YOU STILL WORKING FOR THIS EMPLOYER? <input type="checkbox"/> YES <input type="checkbox"/> NO	
<input type="checkbox"/> QUIT ON WHAT DATE? <input type="checkbox"/> DISCHARGED	IF QUIT, DID YOU GIVE YOUR EMPLOYER 72 HOURS NOTICE BEFORE QUITTING? <input type="checkbox"/> YES <input type="checkbox"/> NO		
HAVE YOU ASKED FOR YOUR WAGES? <input type="checkbox"/> YES <input type="checkbox"/> NO	IF YES, ON WHAT DATE?	WERE YOU PAID AT TIME OF DISCHARGE? <input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> BANKRUPTCY <input type="checkbox"/> BUSINESS SOLD <input type="checkbox"/> INSOLVENCY

### GROSS WAGES CLAIMED (Do Not Deduct Payroll Taxes)

4 FROM (DATE) 19	TO (DATE) 19	NUMBER OF HOURS, DAYS, WEEKS, MONTHS (SPECIFY)
AT THE RATE OF -- PER HOUR, DAY, WEEK, MONTH (SPECIFY) \$		TOTAL \$

### LESS ANY AMOUNTS FOR THE FOLLOWING

5 MEALS FURNISHED: <input type="checkbox"/> BREAKFAST <input type="checkbox"/> LUNCH <input type="checkbox"/> DINNER	LODGING FURNISHED: <input type="checkbox"/> INDIVIDUAL ROOM <input type="checkbox"/> SHARED ROOM <input type="checkbox"/> APARTMENT	RENTAL VALUE OF APT. TO PUBLIC \$ CASH ADVANCES \$	6 MINUS TOTAL OF CASH OR CREDITS RECEIVED → \$
7 BRIEF EXPLANATION OF COMPLAINT (Use Additional Sheet If Necessary)			Amount Due Or Balance Claimed → \$

I HEREBY CERTIFY, That this is a true statement to the best of my knowledge and belief. I hereby assign all wages and all penalties owing because of their non-payment, and all liens securing them, to the Labor Commissioner of the State of California to collect in accordance with law.

8 My name may be used in the investigation of this complaint.  Yes  No

(Signed) \_\_\_\_\_ Date \_\_\_\_\_

Address \_\_\_\_\_

**DO NOT WRITE ON THIS SIDE — For Office Use Only**

COMPLAINANT

AGAINST

FILE NO.

ADDRESS

ADDRESS

CLAIM NO.

*NEW*

CHANGED: DATE & TO

ALLEGED VIOLATIONS:

*6310 6311 6312*

IVC NO.

INDUSTRY CODE

Assigned/Reassigned / Transferred/Referred TO & DATE

VERIFIED WAGES \$ \_\_\_\_\_

AS  DETERMINED 11

RECOVERED: FOR CLAIMANT

FOR STATE

OVERTIME \$ \_\_\_\_\_

COMPROMISED 12

PAID DIRECT \$ \_\_\_\_\_

\$ \_\_\_\_\_

X X X X X

PENALTIES: W.T. \$ \_\_\_\_\_

CONCEDED 13

PAID DLSE \$ \_\_\_\_\_

\$ \_\_\_\_\_

X X X X X

PAY DAY \$ \_\_\_\_\_

MINIMUM

DEDUCTIONS \$ \_\_\_\_\_

\$ \_\_\_\_\_

X X X X X

CHILD LABOR \$ \_\_\_\_\_

TOTALS RECOV'D \$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

PUBLIC WORKS \$ \_\_\_\_\_

DISMISSED OR CLOSED DUE TO:

WAGES

OTHER

COSTS DUE STATE \$ \_\_\_\_\_

**RECORD OF RECEIPTS**

**RECORD OF PAYMENTS TO CLAIMANT**

CASHIER'S USE

DATE RECEIVED

CASH, CHECK, ETC.

RECEIPT NUMBER

AMOUNT

DIVISION CHECK NO.

DATE PAID

BALANCE DUE

SIGNATURE/REMARKS

**CITATIONS**

**PENDS: DATES**

KIND

DATE

HOUR

*CHL-OSHA*

FORM 935 BF  
MAILED DATE: \_\_\_\_\_  
DISPOSITION ENTERED REGISTER



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

REQUEST FOR HEALTH HAZARD EVALUATION

This form is provided to assist in registering a request for a health hazard evaluation with the U.S. Department of Health, Education, and Welfare as provided in Section 20(a)(6) of the Occupational Safety and Health Act of 1970 and 42 CFR Part 85. (See Statement of Authority on Reverse Side).

Name of Establishment Where Alleged Hazard(s) Exist \_\_\_\_\_

Company { Street \_\_\_\_\_ Telephone \_\_\_\_\_  
Address { City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

1. Principal Company Activity \_\_\_\_\_  
(manufacturing, construction, transportation, services, etc.)

2. Specify the particular building or worksite where the alleged hazard is located, including address \_\_\_\_\_

3. Specify the name and phone number of employer's agent(s) in charge. \_\_\_\_\_

4. Describe briefly the hazard(s) which exists by completing the following information:

Identification of Hazard or Toxic Substance(s) \_\_\_\_\_

Trade Name (If Applicable) \_\_\_\_\_ Chemical Name \_\_\_\_\_

Manufacturer \_\_\_\_\_ Does the material have a warning label? Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes, attach copy of label or a copy of the information contained on the label.

Physical Form: Dust  Gas  Liquid  Mist  Other

Type of Exposure? Breathing  Swallowing  Skin Contact

Number of People Exposed \_\_\_\_\_ Length of Exposure (Hours/Day) \_\_\_\_\_

Occupations of Exposed Employees \_\_\_\_\_

5. Using the space below describe further the nature of the conditions or circumstances which prompted this request and other relevant aspects which you may consider important, such as the nature of the illness or symptoms of exposure, the concern for the potentially toxic effects of a new chemical substance introduced into the workplace, etc.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. (a) To your knowledge has this hazard been considered previously by any Government agency? \_\_\_\_\_  
(b) If so, give the name and address of each.

\_\_\_\_\_

(c) and, the approximate date it was so considered. \_\_\_\_\_

7. (a) Is this request, or a request alleging a similar hazard, being filed with any other Government agency? \_\_\_\_\_ (b) If so, give the name and address of each.

The undersigned (check one)

Employer

Authorized Representative of employees\*

i            ii            iii            (circle one)

believes that a substance (or substances) normally found at the following place of employment may have potentially toxic effects in the concentration used or found.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Typed or Printed Name \_\_\_\_\_ Telephone: Home - \_\_\_\_\_

Address { Street \_\_\_\_\_ Business - \_\_\_\_\_  
          { City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

If you are a representative of employees, state the name and address of your organization.

Please indicate your desire:

I do not want my name revealed to the employer.

My name may be revealed to the employer.

**Authority**

Section 20(a)(6) of the Occupational Safety and Health Act, 29 U. S. C. 669(a)(6) provides as follows: The Secretary of Health, Education, and Welfare shall . . . determine following a written request by any employer or authorized representative of employees, specifying with reasonable particularity the grounds on which the request is made, whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found; and shall submit such determination both to employers and affected employees as soon as possible. If the Secretary of Health, Education, and Welfare determines that any substance is potentially toxic at the concentrations in which it is used or found in a place of employment, and such substance is not covered by an occupational safety or health standard promulgated under section 6, the Secretary of Health, Education, and Welfare shall immediately submit such determination to the Secretary of Labor, together with all pertinent criteria.

\*"Authorized representative of employees" means any person or organization meeting the conditions specified in 42 CFR Part 85.3 (b) (4) (i), (ii) or (iii):

(i) - that he is an authorized representative of, or an officer of the organization representing, the employees for purposes of collective bargaining; or

(ii) - that he is an employee of the employer and is authorized by two or more employees employed in the workplace where the substance is normally found, to represent them for purposes of the Act. Each such authorization shall be in writing and included in the request; or

(iii) - that he is one of three or less employees employed in the workplace where the substance is normally found.

Send the completed form to:

National Institute for Occupational Safety and Health  
Hazard Evaluation Services Branch  
U.S. Department of Health, Education, and Welfare  
Cincinnati, Ohio 45202

**IMPORTANT DEADLINE!** This appeal must be filed with the Division of Industrial Safety or the Appeals Board within 15 working days of the issuance of a citation.

STATE OF CALIFORNIA  
OCCUPATIONAL SAFETY AND HEALTH APPEALS BOARD

IN THE MATTER OF

Employer \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**EMPLOYEE APPEAL**

Docket No. \_\_\_\_\_

(Leave Docket Number Blank: To be filled in by Appeals Board)

(Please attach a copy of the citation and/or Notice of Civil Penalty to this form.)

This is an appeal by \_\_\_\_\_

from Citation No. \_\_\_\_\_, dated \_\_\_\_\_

It is alleged that the period of time fixed in the citation for the abatement of the violation is that:

*(Note: State here specifically what is unreasonable about the time allowed.)*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please send all future notices and correspondence to:

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Phone)

\_\_\_\_\_  
(Type or print name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Social Security Number)

\_\_\_\_\_  
(Signature)

PLEASE ATTACH A COPY of the Citation and/or Notice of Civil Penalty to this form.

- J -

IMPORTANT DEADLINE! This notice of contest must be filed within 15 working days from the receipt of the citation or notice of civil penalty.

STATE OF CALIFORNIA  
OCCUPATIONAL SAFETY AND HEALTH APPEALS BOARD  
1006 Fourth Street, 4th Floor  
Sacramento, California 95814

In the Matter of

Employer \_\_\_\_\_ )  
\_\_\_\_\_)  
\_\_\_\_\_)  
Address \_\_\_\_\_ )  
(Street) \_\_\_\_\_ )  
\_\_\_\_\_)  
(City) \_\_\_\_\_ (State) \_\_\_\_\_ (Zip) \_\_\_\_\_ )

NOTICE OF CONTEST (APPEAL)

Docket No. \_\_\_\_\_  
(Leave Docket Number Blank: To be filled in by Appeals Board)

1. This is an appeal from:

- Citation No. \_\_\_\_\_ dated \_\_\_\_\_ which was received on \_\_\_\_\_.
- Notice of Civil Penalty No. \_\_\_\_\_ dated \_\_\_\_\_ which was received on \_\_\_\_\_.
- Notice In Lieu of Citation No. \_\_\_\_\_ dated \_\_\_\_\_ which was received on \_\_\_\_\_.

2. By this appeal, appellant contests:

- The existence of the violation alleged in the citation (if the citation alleges more than one violation, specify which is or are contested): \_\_\_\_\_
- The reasonableness of the abatement period specified in the citation.
- The reasonableness of the changes required by the Division of Industrial Safety to abate the condition which is the basis of the violation.
- The amount of the civil penalty specified in the notice of civil penalty.

3. The specific grounds for this appeal are:

(Note: The grounds for appeal, specifying the error in the citation or notice, must be stated in the notice of contest.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



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CITY, STATE, ZIP:

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(For 1 year starting with date of order)

Stock No.	Item	Description	How Many	Price Each*	Total Price	Stock No.	How Many	Price Each	Total Price
003000801	Title 8 (complete)	Industrial Relations (All Divisions - Safety Orders)		59.80	\$	080000		102.00	\$
003000813	Ch. 3.2, 3.3, 3.5, 4	Div. of Ind. Safety, CAL/OSHA (All Safety Orders)		39.90		080104		92.00	
003000825	Ch. 2, 3, 4.5, 5, 6, 7, 8	Industrial Relations, excluding Safety Orders		7.15		080144		18.00	

INDIVIDUAL SAFETY ORDERS

003008618	Sub. Ch. 6.1	Aerial Tramway		4.00		080601		5.00	
003008849	Sub. Ch. 3	Compressed Air		4.00		080307		5.00	
003008852	Sub. Ch. 4	Construction		7.15		080407		18.00	
003008864	Sub. Ch. 5	Electrical		5.95		080507		5.00	
003008876	Sub. Ch. 6	Elevator		4.35		080607		6.00	
003008888	Sub. Ch. 7	General Industry		13.30		080700		42.00	
003008137	Sub. Ch. 13	Logging/Sawmill		4.00		081300		5.00	
003008176	Sub. Ch. 17	Mine		4.00		081700		5.00	
003008149	Sub. Ch. 14	Petroleum, Drilling/Prod.		4.00		081400		5.00	
003008152	Sub. Ch. 15	Petroleum Refining/Transp./Handling		4.00		081500		5.00	
003008837	Sub. Ch. 1,2	Pressure Vessel		4.00		080107		5.00	
003008188	Sub. Ch. 18	Ship Building, Ship Repairing & Ship Breaking		4.00		081800		5.00	
003008190	Sub. Ch. 20	Tunnel		4.00		082000		5.00	
00300821-4	Sub. Ch. 21	Tele-Communications		4.00		082100		5.00	
00300920-4	Part II	Agriculture Labor Relations		4.00		082200		5.00	
	"Z" Registers	Notice of Proposed Hearings				500000			

Basic Publication Total Order \$

Subscription Total Order	
Basic Publication Total Order	
Tax on Basic * Publication Only	
<b>TOTAL CASH AMOUNT</b>	\$

\*Tax Information, Subject to Change by State and/or City Governments:  
California: (state-county-city tax): Add 6% to amount of order

No Tax on Amendment Service

CONTROL OF HAZARDOUS SUBSTANCES (DIS REGULATIONS)

This information contains a brief review of those portions of the General Industry Safety Orders (Title 8), Articles 107-112, which may be of particular interest to union members having health and safety responsibilities.

ARTICLE 107. DUSTS, FUMES, MISTS, VAPORS AND GASES

Section 5144

(RESPIRATORY PROTECTIVE EQUIPMENT)

pg. 432.257

(a) When and Where To Be Worn.

Where it is impractical to remove harmful dusts, fumes, mists, vapors, or gases at their source, or where emergency protection is required, the employer shall provide approved respiratory equipment to all exposed employers.

(c) Education and Training.

Employees must be instructed and trained in the need, use, sanitary care, and limitations of such respiratory equipment. Respirators must be inspected before each use and must not be worn when conditions prevent a good gas-tight face seal.

pg. 432.258

(d) Maintenance and Sanitation.

The employer must provide, repair, or replace respiratory protective equipment as required due to wear and deterioration. Such equipment must be maintained in effective and sanitary condition. Respirators used for emergency situations must be inspected and sanitized after each use and inspected at least monthly. Records of the most recent inspection, detailing inspectors identification, date and respirator identification number, must be kept on the respirator or its storage container.

pg. 432.258.1

(f) Respiratory Protection Program.

The correct respirator must be specified for each job. Person responsible for issuing must be adequately trained to insure that correct respirator is used. Work environment must be monitored to determine increased exposure concentrations or introduction of additional toxic substances. Regular inspections

must be conducted to insure that employee exposure or stress is not increased.

pg. 432.258.2

(g) Atmospheres Immediately Hazardous to Life or Health.

In atmospheres immediately hazardous to life or health, at least two(2) persons equipped with approved respiratory equipment must be on the job. At least one(1) standby person must be safely located and equipped with rescue equipment, including self-contained breathing apparatus.

(h) Medical Limitations.

Employees should not be assigned to tasks requiring use of respirators until a physician determines that the employee is physically able to perform the work while using the required respirator. Such employees should be medically reviewed annually.

Section 5148

(SANITATION AND CLEANLINESS)

pg. 432.258.5

(d) The employer must provide means for cleaning respiratory equipment, and it must be cleaned before it is passed from one employee to another. If filter-type respirators are required, each employee must have a respirator for his exclusive use.

Section 5150

(VENTILATION AND PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS FOR WELDING, BRAZING AND CUTTING)

pg. 432.258.6

(e) Chlorinated Hydrocarbons.

Degreasing or other operations involving chlorinated hydrocarbons must be located or controlled so that vapors will not enter the air surrounding any welding or cutting operations.

Section 5154

(VENTILATION AND PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS FOR OPEN SURFACE TANK OPERATIONS)

pg. 432.258.26

(j) Personal Protection.

All employees required to work in such a manner that any part of their body may be wet, splashed or contaminated with liquids other than water, must be provided with appropriate protective clothing and equipment.

ARTICLE 109. HOT, FLAMMABLE, POISONOUS, CORROSIVE  
AND IRRITANT SUBSTANCES

Section 5165

(OPEN TANKS, VATS AND OTHER CONTAINERS  
CORROSIVE LIQUIDS)

pg. 432.276

- (d) When repairs, alterations, or cleaning operations are performed on tanks, vats, or pans which have last contained corrosive liquids, employees engaged in the operation must be advised of potential hazards. If the tank, vat or pan is to be entered, it must be emptied and flushed out. Employees entering the vessel must be provided with protective clothing suitable for hazards which may be encountered.

Section 5166

(POISONS - GENERAL)

pg. 432.276

- (d) Employees who may be exposed to poisonous substances must be advised of the potential hazards and of protective methods to prevent injury by such substances.

Section 5182

(CONFINED SPACES)

pg. 432.287

- (a) When repairs, alterations, cleaning, or other operations are performed in confined spaces in which flammable, poisonous, asphyxiant, suffocant, or anesthetic vapor or gases are likely to exist in hazardous amounts, employees engaged in the operation must be advised of potential hazards. Employees entering the space must be protected by approved oxygen or air respiratory equipment; or sufficient ventilation must be supplied so that the air in the space contains sufficient oxygen to support normal consciousness.

pg. 432.288

- (j) Except in extreme emergency situations involving imminent peril to life, employees must not be permitted to work without approved respiratory equipment where the oxygen content of air is less than 19 1/2 percent by volume (dry basis).

Section 5184

Hazardous Mixtures

pg. 433

- (b) Whenever substances are mixed and there is the potential of fumes, spatter, gases or vapors, employees must be informed of the hazards which may be encountered. Where

possible, employees must be protected from harmful exposure by remote location, shielding or other appropriate means. If the above methods are not possible, then employees must be provided with suitable protective clothing and safety devices.

ARTICLE 10. SPECIAL HAZARDOUS SUBSTANCES AND PROCESSES

Section 5197

pg. 434

REPAIR OF MAGNESIUM DUST COLLECTION UNITS

- (b) Before repairs involving use of open flames or other sources of ignition are performed, employees must be informed of hazards and employers must provide constant and competent supervision. In addition: (1) all dust around system must be removed; (2) continuous mechanical ventilation must be provided; and (3) a flameproof wool blanket must be available near repair site.

Section 5203

pg. 439

NITROCELLULOSE

- (d) Quick-acting deluge (excess) showers and fire blankets must be provided and all employees must be informed of their location and how to use them.

Section 5203

pg. 439

MOLTEN SALT BATHS

- (a) Where molten salt baths are used for heat-treating metallic objects, means must be provided to protect the operator from splashes or spatters of the molten salt. Hoods must be provided for all baths containing nitrates or cyanides or other baths if fumes or vapors might cause harmful exposure.

pg. 440

NITRATE BATHS

- (b)(6) The molten salt container must be emptied at regular intervals and inspected for deterioration. When inspection shows that deterioration has taken place to such an extent that failure is likely, or that uneven heating of the salt may occur, the container must be replaced or repaired.

Section 5206

pg. 441

SPECIAL CORROSIVES

Where carbon disulfide, ethylene chlorohydrin, pentachloroethane and tetrachloroethane are used, means must be provided such that skin contact is avoided. Ethylene chlorohydrin penetrates rubber gloves and therefore does not give adequate protection.

Section 5207

pg. 441

CADMIUM

- (a) Wherever cadmium or cadmium-coated articles are welded, burned or heated such that fumes cause hazardous exposure, the work must be performed in an exhausted booth. The booth must be arranged and ventilated such that employees are not exposed to hazardous concentrations of fumes. In the alternative, employees performing the operation shall be protected by respiratory equipment approved for use in cadmium fumes.

Section 5208

pg. 442.1

(ASBESTOS)

- (d) Respiratory Protective Equipment.

When engineering controls and wet handling methods are not feasible or are incapable of controlling the concentration or in an emergency, respiratory protection must be provided and worn in accordance with provisions of section 5144. No employee shall be assigned to tasks requiring the use of respirators if based on his most recent examination an examining physician determines that the employee will be unable to function normally wearing a respirator. Nor shall an employee be assigned such tasks if the physician determines that the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee must be rotated to an equivalent job which duties he is able to perform, if such a position is available.

pg. 442.1

- (e) Change Rooms and Special Clothing.

The employer must provide coveralls or similar whole body clothing, head coverings, gloves and foot covering for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level. Likewise, the employer must also provide change rooms for such employees with two separate lockers or containers for each employee in order to prevent contamination of street clothes from work clothes.

pg. 442.3

(j) Medical Examination.

- (1) The employer must provide or make available at his cost a preplacement examination of each employee working regularly with asbestos who has been or may be expected to be exposed to concentrations of asbestos fibers in excess of 1 fiber, longer than 5 micrometers, per cubic centimeter. This examination must be given to new employees within 90 days after employment.
- (2) The employer must provide an annual medical examination at his cost to all employees specified in 5208(j)(1), above. Within 30 days of termination of any employee specified above, the employer must provide or make available a medical examination, if the employee has not had such an examination within the previous year (not at his cost).
- (3) Records of the medical examinations for each such employee must be maintained by the employer for at least 30 years. Access to records of such medical examinations must be made available for inspection and copying upon request of an employee or former employee to his physician.

Section 5209

(CARCINOGENS)

pg. 442.4.3

(c) Regulated Areas.

- (4)(d) Employees engaged in handling carcinogens must be provided with, as minimum protection, a half-face, filter type respirator for dusts, mists and fumes. Employees handling beta-propiolactone, bis-chloromethyl ether, methyl chloromethyl ether, or ethyleneimine must be provided with a full-face, supplied air respirator of the continuous flow or pressure-demand type.

pg. 442.4.9

(e) Signs, Information and Training.

- (5) Each employee, prior to being authorized to enter a carcinogen regulated area must receive a training and indoctrination program which must include: a) nature of carcinogenic hazards; b) specific nature of operation; c) explanation of medical surveillance program; d) purpose for decontamination procedures; e) purpose of emergency procedures; f) employee's role in emergency procedures; g) information on carcinogen hazard recognition and evaluation; h) purpose for specific first-aid procedures; and i) basic understanding of first-aid procedures.

**OCCUPATIONAL HEALTH AND SAFETY  
PERSONAL DOCUMENTATION**

**Labor Occupational Health Program  
Center for Labor Research and Education  
Institute of Industrial Relations  
University of California, Berkeley**

**June, 1976**

## DOCUMENTATION

It is essential that individuals and union representatives document and properly maintain health and safety-related records. Besides establishing evidence (histories) of individual occupational exposures to hazardous substances, such records help unions in development of workplace accident and illnesses trends and determine management and governmental agency decision patterns. Documentation efforts should concentrate on the following areas: workers' personal health and safety records; communications with union management and governmental personnel; filing Cal/OSHA health and safety complaints and discrimination complaints; and worker's compensation claims. Naturally, individuals won't be responsible for all information areas. They will, however, find it useful to themselves and fellow workers to understand the areas.

### 1. Personal Health and Safety Records

The information included in personal health and safety records --pre-employment physicals, periodic medical examination results, safety training, accident and illness reports, workplace monitoring results-- inform workers about their personal physical conditions and possible job-related hazards. These records should include the following information:

#### A. Pre-employment physicals

1. the date given
2. the worker's specific job, with job description or job conditions

3. if possible, names, addresses, and specialties of persons and agencies conducting the physical
4. tests administered --blood pressure, blood, urine, X-Rays, etc.

Workers should always request that test results be forwarded to their personal physicians, or if that isn't possible, that they be given an explanation of the test results.

#### B. Periodic medical examinations

1. items 1-4 listed for pre-employment physicals
2. comparisons to previously administered tests to determine whether any significant changes have occurred
3. when medical problems are revealed, record management's attempts to inform the worker and provide for necessary follow-up exams and treatment

As with pre-employment physicals, workers should request results be sent to their personal physician or an explanation of the results.

#### C. Safety and Health Training

1. whether any health or safety training was provided at hiring time
2. specific safety equipment assigned for particular work processes, and the hazards the equipment was supposed to prevent
3. whether any health or safety training was provided when new work assignments were made
4. types of safety training --books, pamphlets, films, posters, classes, on-the-job-- provided, and for how long

#### D. Work-related accidents and injuries

1. type of illnesses or injuries sustained
2. duration of illness or injury

3. diagnosis and type of treatment prescribed
4. names of persons responsible for diagnosis and treatment, their addresses and specialties.
5. any job-related illnesses or injuries sustained by fellow workers

Workers should keep records of lost worktime or workdays due to job-related illnesses or accidents. They should report every personal work-related accident or illness no matter how minor, to management in written form. Workers should also notify their union representatives orally and in writing of the type of accident or illness, where it occurred, and whether similar accidents or illnesses have been reported for the same location or work process. With their union representatives, workers should also discuss whether to file workmen's compensation claims.

#### E. Workplace monitoring

1. the frequency of monitoring, type of monitoring, and names of individuals conducting monitoring tests
2. recordation dates, location, and any management efforts to resolve the problem when work practices approach or exceed established health and safety limits

Workers should be informed of all monitoring results involving their specific work areas or related to areas with which they have direct contact.

#### 2. Communication with Union, Management and Government Personnel

It is usually impossible for individual workers to correct the numerous and reoccurring health and safety hazards encountered on their job or, on a constant basis, to follow up on any improvements made. When attempting to obtain information or assistance to speedily resolve health and safety problems,

workers often communicate by letter, memo, telephone or formal written document with their union representatives, management or government agencies responsible for enforcing standards. The individual's own record of communications between him(her)self and union representatives, management or government personnel is very important.

Use the following suggestions as guidelines in assuring that all material relevant to you is recorded in at least one location.

1. Keep a health and safety notebook or log devoted to the three possible types of contact: union, management or government
2. In each section record all written requests, inquiries and responses sent and received. Keep in chronological order.
3. Log all relevant telephone and personal conversations with management representatives and first-line supervisors on health and safety issues.
4. Include sections in the notebook for other relevant materials

### 3. Filing Cal/OSHA Complaints<sup>\*</sup>

Clarity and comprehensive background and supportive information are essential to proper documentation of a complaint. Complaints should adequately identify the problem, its location, and where possible identify the standards that may have been violated. During the inspection, it is also important for you to inform the inspector of any efforts you or your representative have made to resolve the problem. Filed complaints should identify as clearly as possible:

1. the problem
2. whether you feel it is a safety hazard (housekeeping, machine guarding, etc.) or a health hazard. This part is very important in

<sup>\*</sup> Chapter 2 of this manual refers to Cal/OSHA complaint filing

determining what kind of inspection you will get

3. whether you feel the danger to you or other workers is immediate; if so, specify the condition is imminent danger
4. location of the hazard(s), including building, area, specific machine, etc.
5. names, addresses, and telephone numbers of management representatives previously contacted about the problem(s)
6. the date and content of any oral or written communications (or attach a copy of the letter(s)).
7. the specific jobs or work processes you and other potentially exposed workers are involved in, and how these relate to the hazard
8. whether the problem occurred in the past and whether a Cal/OSHA citation has been previously issued
9. whether you have raised this issue with union representatives for possible grievance action

Always keep a copy of the complaint for your records; also forward a copy to union representatives if they have not yet been notified of the complaint. Keep a record in your personal log of names, dates, and content of any conversations occurring prior to inspections.

#### 4. Filing Cal/OSHA Discrimination Complaints \*

Appendix A of Chapter 2 covers the major considerations in filing a Cal/OSHA discrimination complaint. Recordkeeping covered here relates to factors prior to filing a discrimination complaint, that is, consideration of possible management reprisals, short of actual termination or layoff. For example, letters of reprimand placed in your file, denied promotions or merit increases or general harrassment, for your having complained too much about possible workplace hazards. Before you actually complain of

\* Filing a discrimination complaint is covered in Chapter 2 of this manual

hazards to management or file a Cal/OSHA complaint do the following:

1. keep records of job evaluations to later demonstrate that your work performance has never been criticized
2. keep absence and illness records to demonstrate that you have not abused sick leave provisions
3. indicate immediately in your log or notebook how management responds to your complaints about health and safety hazards. This is especially important where management representatives seem hostile or threatening
4. document how your relationship with management has deteriorated following complaints of health and safety hazards
5. inform other workers and union representatives that you have complained to management. Record their names; they may serve as witnesses should you later file a discrimination complaint

After filing a Cal/OSHA complaint write brief descriptions of all subsequent conversations with management representatives; forward a copy to management and union representatives. Also, keep a copy in you files.

#### 5. Filing Workers' Compensation Claims

California State Labor law requires every employer to protect employees sustaining job-related injuries or illnesses by carrying workers' compensation insurance or by certification of self-insurance.

Workers should promptly report job-related injuries or illnesses to management and union representatives. The employer should refer the worker for

necessary medical care and immediately report the claim to the insurance carrier.

The employer's insurance pays the injured worker's necessary medical care, temporary disability benefits at 2/3 of lost wages (up to a maximum of \$119 a week) and long-term benefits for permanent disability. The employer also pays for injured worker's vocational rehabilitation if they qualify under a plan approved by the State Division of Industrial Accidents.

Workers believing that benefits have not been received to adequately compensate them for injury or illness, should file a claim with the State Workers' Compensation Appeals Board. Those filing such claims should always be prepared to justify their claims, although many cases are not disputed by employers.

Documentation for worker's compensation claims is fairly complex. Because of the system's increasing complexity, legal representation is almost a necessity. The worker still has to provide most background information; therefore, you should consider the following if you are filing such a claim:

1. be prepared to explain your specific occupation, the duties involved, and the skills required --this information will assist in determining the rates to which you may be entitled
2. keep records of your annual earnings (W-2 forms) going back at least 3 years. Also, keep records of additional paid

expenses such as meals, travel, per diem, overtime, etc. For claim computation, any earnings might increase your over-all hourly pay rate.

3. if you are a new or recent employee, try to produce evidence that you would have continued to work and that there were no indications of possible termination or lay-off. This may involve getting your union business agent to attest to the projected availability of work
4. be prepared to explain the date and nature of the injury or illness and how it occurred
5. keep a record of all your prior job-related injuries and illnesses; they may be contributing factors to a recent injury. If so the rates at which you will be compensated are increased
6. try to obtain copies of all information in your personnel file; it could contain reports about good work habits or previously reported injuries or illnesses
7. if another party's negligence caused your injury or illness, a third party or malpractice suit may be possible in addition to the workers compensation claim
8. keep a record of all payments made by your employer related to your illness or injury. Unless the following were paid prior to your claim, the employer may be additionally penalized for unreasonable delay in furnishing benefits: (A) prescription and medical bills; (B) mileage to and from physician's office, drugstore, etc.; (C) time spent answering questions for employer's attorneys; (D) temporary and permanent disability payments based on the correct rate
9. if you suffered an injury or illness and have since returned

to work, be prepared to explain: (1) how long you were off the job; (2) how many days you were not paid; (3) what date you returned to work; (4) whether you were penalized when you returned to work.

10. be prepared to explain your main interest or objective in filing a workers' compensation claim --medical treatment, financial compensation, vocational rehabilitation. This information will help your advisors determine the most effective method of pursuing your particular case

UNION DEVELOPMENTS IN OCCUPATIONAL HEALTH AND SAFETY

Labor Occupational Health Program  
Center for Labor Research and Education  
Institute of Industrial Relations  
University of California, Berkeley

June, 1976

### PROVISION FOR PERIODIC MEDICAL EXAMINATION FOR HAZARDOUS WORK

Approximately 600 members of OCAW Local 8-74, employees of the Arco Polymers Plant near Monaca, Pennsylvania, recently underwent medical tests to determine if their exposure to styrene was responsible for health problems. Nervous disorders contribute to a high rate of absenteeism among the workers, and several men in their 30's or 40's have died of cancer, according to the local's health and safety chairman. The medical exams were conducted by a team of doctors from Mount Sinai School of Medicine in New York. Styrene, a liquid monomer derived from benzene and coke, is processed into polystyrene--used in such items as meat packaging trays, insulation, ice chests, and numerous plastic housewares. (Job Health News Service)

### ACCESS TO MEDICAL RECORDS

At an ARCO chemical plant near Pittsburgh, OCAW Local 8-74 members knew they were working with benzene, which affects the bone marrow, resulting in a low white blood cell count and in some cases, leukemia. It was standard company policy at the plant for the company doctor to transfer workers discovered to have low white blood counts to another area until the blood count was back to normal. Concerned about this procedure and the long-term effects of benzene, the workers asked that an outside doctor be permitted to examine the results of blood tests taken to detect effects of benzene. The company accused the union of a conspiracy, and denied the request. The union filed a grievance and subsequently won its case in arbitration.

### UNION - MANAGEMENT COMMITTEE

The United Auto Workers and the auto companies made history in late 1973, when they agreed to set up a national joint safety and health committee and plant-level committees composed of one management and one union representative. The local committees hold monthly meetings, conduct biweekly inspections, accompany OSHA compliance officers on plant inspections, review safety and health programs, check accident reports, and monitor noise, carbon monoxide, and ventilation. All manufacturing plants employing more than 600 workers have a full-time union safety and health representative. Those plants with more than 10,000 workers have two full-time representatives.

### PROHIBITION ON USE OF HAZARDOUS SUBSTANCES

The possible hazard from polyvinyl chloride plastics used for meat wrapping is the concern of another Philadelphia local, Meatcutters' Local 196. The local's rank and file committee recently passed a resolution urging the union in its

next contract negotiations to fight for a ban on use of PVC plastics in hot wire meat-wrapping operations. The committee has urged the union to educate all members about possible vinyl chloride hazards from heating of PVC plastic and to demand that all employers either find substitutes for PVC plastic or use a cold wire cutting method. (JHNS)

#### LOCAL UNION COMMITTEE

A contract recently negotiated by 80 members of the Independent Restaurant Workers' Union at the Orson Welles Restaurant in Cambridge, Massachusetts, calls for management to correct dangerous conditions "with all possible speed" -- within 72 hours at most. The contract also sets up a three-member union safety committee that will inspect the restaurant regularly for hazards. Under the new agreement, management also must supply protective clothing and first aid equipment on both floors of the restaurant. (JHNS)

#### RIGHT TO TRANSFER TO ANOTHER POSITION

New contracts negotiated by Steelworkers' Locals 5417 and 5762, which represent workers in the Canadian uranium industry, give workers with long exposure to potentially dangerous radiation the right to switch to less dangerous jobs. The health breakthrough came after an "epidemic" of silicosis and lung cancer among Canadian uranium workers, according to District 6. Under the new contracts, the companies also must notify the union before they introduce any new chemicals, solvents, equipment, or processes into the workplace. (JHNS)

#### INDEPENDENT HEALTH RESEARCH STUDIES

##### RUBBER INDUSTRY JOINT OCCUPATIONAL HEALTH PROGRAM

This unique program of research on health hazards in the rubber industry dates back to the 1970 round of negotiations between the United Rubber Workers and the rubber companies. The URW negotiated contracts with eight rubber companies calling for studies by the Harvard and University of North Carolina Schools of Public Health of thousands of currently employed and retired rubber workers. The companies and the union cooperate with the study groups, but the researchers conduct their own independent studies. Research conducted so far has revealed higher rates of certain types of cancer among rubber workers in certain jobs. Those exposed to solvents, for example, have three to five times the risk of leukemia. Studies have also established links between stomach cancer and rubber processing, where workers may swallow such substances as carbon black. Workers in pigment blending and batch preparation, who are exposed to cadmium, have high rates of prostate cancer. (JHNS)

NOTIFICATION OF HAZARDOUS MATERIALS

United Auto Workers Local 6, at International Harvester in Melrose Park, Illinois, threatened to strike unless the company agreed to inform all employees about hazardous materials in the plant and about safety rules for their use. The company reluctantly agreed to: (1) survey the plant for all chemicals used; (2) make a master list of all chemicals indexed by type and department where used; (3) developed a data sheet for each chemical; (4) gave each department a list of chemicals used there, along with information about their effects and safe use; (5) agreed to review these data sheets with each new or transferred worker; (6) held hazardous materials training sessions in each department; and (7) assured the union that this training in no way relieved foremen of responsibility for safe handling of materials in their departments. (JHNS)

\*\*\*\*

At a Ciba-Geigy chemical plant in McIntosh, Alabama, chemicals were identified only by codes, which the company refused to identify, saying that workers had no right to the information. However, the workers, members of OCAW Local 3-562, knew they were exposed to at least two dangerous substances--benzene and asbestos--and wanted to know what else was behind those mysterious codes. The union filed a grievance asking that "employees be informed of the generic names of all chemical substances so that proper biological monitoring can also be instituted". An arbitration judge ruled in the union's favor. (JHNS)