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A New Approach: Health and Safety Training in Apprenticeship Programs

"I think the program should be a mandatory part of all apprenticeship training. Some people pay to get this knowledge and we are getting it free. How's that for progress?"

—Rick Rogers, Auto Apprentice

With the enactment of OSHA, the worker now has the legal right to work in a safe environment. However, convincing seasoned workers that they no longer have to work under unsafe conditions and training them to work more safely are difficult tasks. Apprenticeship programs are excellent entry points to begin re-educating workers' occupational health and safety attitudes. New to the work force, apprentices are not used to dangerous work procedures or to handling dangerous material. Their numbers—37,000 apprentices divided between 350 trades—are significant to make a dent in the California work force.



During the first class session, students were introduced to the planners of the pilot program. From left to right, Dr. Phillip Polakoff; Auto Apprentices Rick Rodgers and Debi Ford; Bob Fowler; and Terry Downey, Auto Repair Trades Joint Apprenticeship Council.

Early this year, a pilot Automotive Repair Apprenticeship Health and Safety course was coordinated by Bob Fowler (Labor Educator, Labor Occupational Health Project) with the Automotive Repair Trades Joint Apprenticeship Committee and the Pittsburg Unified School District; the course was housed by the Pittsburg Unified School District. 55 first-year automotive apprentices—parts, body and fender, and automotive repair—met together to cover: OSHA and Cal/OSHA standards and history; organized labor and rank and file input into OSHA; the general occupa-

tional health picture in the U.S.; respiratory diseases; and specific health hazards in the auto repair industry. Stellman and Daum's *Work Is Dangerous To Your Health* was supplemented by pamphlets and audio-visual materials specifically oriented to the trade. (Table I)

Instructors for the 12 session, 36 hour course (January 7 to February 13, 1975) included the Labor Occupational Health Project's Bob Fowler, Phillip Polakoff, Donald Whorton, and Bruce Poyer, workers' compensation attorney Yank Marcus, and technical consultant Emlyn Cox from the California Division of Industrial Safety.

The course's high point was an inspection of the Pittsburg Unified School District Maintenance Facility—a carpentry, plumbing, electrical, and parts shop. Mr. James Villa, the Director of Maintenance Operations and Transportation, arranged the inspection. In return he requested a list of the apprentices' findings, saying he knew a lot was wrong and would use their list as a guide to correct existing unsafe conditions.

CONTINUED ON PAGE 5

KQED TO TELEVISE PROGRAM ON HAZARDOUS WORK ENVIRONMENT

On April 11, 1975, at 6:30 p.m., station KQED (PBS, Channel 9) will televise a program entitled: "Danger—Hazardous Work Environment." The program will consist of a ten minute slide presentation which illustrates occupational-related illnesses and injuries in a variety of workplace environments. This presentation will be narrated by LOHP staff associate Phillip L. Polakoff, M.D.

The second half of the program will consist of a panel discussion moderated by LOHP staff associate Bob Fowler. Other panel participants include Amanda Hawes, an attorney and member of the Bay Area Committee on Occupational Safety and Health (BACOSH); Bruce Kaiper, former shop steward for the Office and Professional Employees Union and member of BACOSH; and Dr. Polakoff.

The program is the first of its type to be produced locally. The Labor Occupational Health Project strongly recommends that all interested workers and their families view this program. Viewer response will determine whether subsequent programs relating to occupational health and safety will be scheduled in the future.

CLEARINGHOUSE

- Currently 25 University of California at Berkeley students are engaged in a course dealing with environmental health issues. This course is being taught by Dr. Phillip Lee Polakoff with the other members of the Labor Occupational Health Project actively participating. The students come from a variety of academic disciplines including conservation, economics, public health and education. They are all engaged in practical research projects such as health hazards in the lumbering, textile, agriculture and printing industries. Hopefully, this course will provide added impetus to the development of an extended curriculum at the University in environmental-occupational health issues.
- During the month of January, 1975, the Labor Occupational Health Project and the Center for Labor Research and Education were requested to act as convenors of an organizational meeting attended by representatives of the Federated Fire Fighters of California, California State Firemen's Association, and the California Fire Chief's Association. The meeting was the result of an OSHA and Cal/OSHA workshop which was held in November, 1974, and hosted by the Sacramento Area Fire Fighters Local 522. At that time, the attending delegates agreed to name a committee to develop proposed standards to present to the Cal/OSHA Standards Board for ultimate approval. The purpose of the January meeting was to organize working committees to develop the appropriate standards, and to create a steering committee to coordinate overall activities.

- On March 11, 1975, Bob Fowler, Labor Coordinator for LOHP conducted an occupational health and safety workshop for shop stewards in the San Francisco Warehousemen's Local 6 of the ILWU. The workshop was held in the Local 6 union hall in San Francisco. Materials covered included the LOHP 'Rights and Responsibilities of Employees Under Cal/OSHA' and the report on Collective Bargaining Clauses prepared by LOHP. The purpose of the workshop was to prepare the shop stewards for developing contractual language proposals for their future negotiations.

News Items

Court Rejects Delay in Vinyl Chloride Standards

Retired Supreme Court Justice Tom Clark, speaking for the U.S. Court of Appeals (Second Circuit), recently upheld an OSHA regulation limiting plastic industry workers' exposure to vinyl chloride to 1 part per million (ppm) parts of air. The same court had issued a temporary restraining order pending final determination of the case.

The case had been filed by the Society of the Plastics Industry, Inc. The Society argued that (1) available medical and scientific evidence did not establish that the 1 ppm exposure level adopted by the Secretary was required; (2) that the Secretary violated OSHA requirements by adopting a standard which was technologically and economically unfeasible for the industry to meet; and (3) that there was no substantial evidence to support the Secretary's conclusion that those who fabricate products out of vinyl chloride should be subject to the same requirements as those who produce vinyl chloride.

In rejecting the Society's contentions, former Justice Clark stated, "we are dealing here with human lives, and the record reveals that 11 manufacturing plant workers and two fabrication plant workers have already died from the effect of this potent chemical." The court also rejected the claim that the standard was unfeasible. "It appears that they (plastics industry) simply need more faith in their own technological potentialities, since the record reveals that, despite similar predictions of impossibility regarding the emergency 50 ppm standard, vast improvements were made in a matter of weeks . . ."

Finally, in addressing itself to the contention that the OSHA standards had been partly based on animal experimentation, the court stated, "it remains the duty of the Secretary to act to protect the working man, and to act even in circumstances where existing methodology or research is deficient. The Secretary . . . has chosen to reduce the permissible level to the lowest detectable one." The new permanent standard requires that workers may be exposed to no more than 1 ppm averaged over eight hours of exposure and no concentration higher than 5 ppm over any 15 minute period. The court's consideration of the case has already amounted to an effective 90-day delay in the enforcement of the new standards because the decision was handed down on February 1, 1975 and employers have been given an additional 60 days to comply. The permanent vinyl chloride standard was to become effective on January 2, 1975.

OSHA Penalty Provisions Ruled Constitutional

The U.S. Court of Appeals (3rd Circuit) has ruled in a split 2 to 1 decision that OSHA penalty provisions are constitutional. The decision was rendered in the case of Frank Irey, Jr., Inc. vs. OSHA Review Commission and the Department of Labor.

Mr. Irey had been cited for a willful violation of OSHA trench safety standards. He argued that OSHA penalties are punitive, and therefore qualify as criminal penalties. Assuming such to be the case, he further argued that under the U.S. Constitution, anyone facing possible criminal penalties has the right to a jury trial. Since OSHA does not grant employers who contest their citations the right to a jury trial, Irey argued that the law was therefore unconstitutional.

Citing U.S. Supreme Court decisions in similar cases, the Court of Appeals rejected Mr. Irey's arguments. The rationale was that the Supreme Court has previously ruled that there are many ways by which Congress can enforce its legislative intentions. One reasonable method is by utilizing administrative agencies; and OSHA is an administrative agency within the Department of Labor.

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The UMW Strike: Human Rights vs. Property Rights

Leo Seidlitz, Ph.D.

Thirty-nine coal miners were killed during the two months that the negotiators for the United Mine Workers and the Bituminous Coal Operators Association spent reaching their first tentative agreement. This amounts to about one death per working day!

This tragic statistic underscores the reason that the miners put health and safety demands at the top of their list. The substance of these demands is sufficiently unusual in union negotiations to merit bringing them to the attention of workers in other industries and to analyze their implications. Since we are primarily reviewing the thrust of the demands, this brief article will not cover the final negotiated language provisions.

These demands were initially worked out by the nearly 1000 delegates at the two-week long UMW convention in December, 1973. By all accounts, this was the most democratic and responsive convention in the history of the UMW. The demands were then further refined in a series of twenty rank-and-file district conferences in 1974. Therefore, there is no question that this set of demands truly represents the considered needs of the miners themselves. Their list is long and detailed and, of course, some of it is specialized for the coal industry. Nevertheless, certain of the demands are worth listing and examining for what guidance can be given to other workers:

- the presently recognized union health and safety committees must have the right to inspect any part of the mine **at any time, unaccompanied by company personnel.**
- the committee must have the right to remove all workers from any operation it believes presents an imminent danger, **without being subject to arbitration.**
- the Union must have **the right to veto safety rules** issued by the mine operators, which it deems to be unreasonable.
- the Union must have **the right to prohibit operators from issuing or continuing any mining plan**, which it believes to represent an unacceptable hazard.
- at least one full-time member of the safety committee **chosen by the local union must be paid by the mine operators at the highest classified rate.**
- all dust sampling must be performed by the union committee or other classified personnel under their direction.
- any local union must have the **right to strike over unsafe conditions.**

Both rank-and-filers and union officials clearly stated at their conferences that they did not expect to win all their demands but that these represented the basic direction that the union had to take in order to make the mines a safer place to work.

What do these demands add up to? Their thrust is that there must be *control by the workers (through their committees and union) over those working conditions affecting their lives.* The miners are saying that when the right of the company to decide how to mine coal conflicts with the right of the miners to maintain their lives, the miners' health and safety must take priority over property rights.

Following the pioneering efforts of the Oil, Chemical and Atomic Workers in the Shell Oil strike in 1973, the UMW strike demands bring the fight for health and safety to a new stage. In this new stage, the miners are

seeking unilateral control over health and safety conditions. It is this author's belief that the long range goal of "a safe and healthful workplace" (supposedly guaranteed by OSHA) will be attained only when the mainstream of American workers reach the conclusion that they themselves must have the final authority over the working conditions that affect their lives.

The strategy of achieving workers' control over their on-the-job health and safety is not inconsistent with utilizing methods such as the use of OSHA complaint procedures, seeking of improved legislation, obtaining technical education and training in the recognition and control of hazards, direct grievance negotiation with shop management, etc. These methods can be used to sensitize workers to their problems as well as to make them aware of their potential power and the resources to deal with them.

For persons interested in receiving a copy of the new health and safety contract language, copies can be obtained upon request from the Labor Occupational Health Project.

RECENT DEVELOPMENTS

CAL/OSHA Completes First Year

The first year of full-scale operation of California's occupational safety and health program (CAL/OSHA) resulted in inspections of 15,000 workplaces, citations for 60,000 violations of job safety and health standards and proposed civil penalties of nearly \$1.4 million, according to a report issued by the State's Agriculture and Services Agency.

In releasing the report, Rose E. Bird, Agency Secretary, noted that only about one-fourth of the firms inspected by the State Division of Industrial Safety were found to be in compliance with the safety and health standards. Inspections in the remaining firms revealed 60,051 violations, 1.6 percent of them classified as serious by the State Labor Code definition. Approximately 900,000 workers were employed in the inspected workplaces during the program's first year. Violations of standards resulted in proposed civil penalties against employers totaling \$1,371,347 in 1974, one-fourth of which was for serious violations.

The CAL/OSHA program is now staffed with 170 Compliance Safety Engineers, 22 District Managers and 18 Consultants. In addition, the Department of Health, which is responsible for investigating occupational health complaints, has 23 Industrial Hygienists and 2 Supervising Industrial Hygiene Engineers.

—San Mateo County Labor and CAL/OSHA Reporter

1973 Occupational Injuries and Illnesses Survey

Results of the annual Occupational Injuries and Illnesses Survey conducted among California employers for 1973 were recently released by the California Division of Labor Statistics and Research.

The incidence rate (number of occupational injuries and illnesses per 100 full-time workers) for recordable cases in the private nonfarm sector was 11.7 in 1973. This was down from the 12.6 recordable cases per 100 full-time employees reported in the first annual California survey which covered the year 1972. The incidence rate for lost workday cases edged downward over the two-year span—to 3.9 lost workday cases per 100 man-years in 1973 from 4.0 in 1972.

In 1973, as in 1972, the highest incidence rates, both for all recordable cases and for lost workday cases, were registered among employer reporting units with from 100 to 249 employees. Rates were somewhat lower among the smallest as well as the largest employers. The 1973 survey yielded a new measure of the severity of occupational injuries and illnesses . . . an incidence rate for lost workdays (which represents the number of workdays lost per 100 manyears worked). The new rate for 1973 was 58.4 for the private nonfarm sector.

Work Fatalities

The number of job-connected deaths rose from 650 in 1972 to 711 in 1973. Highway motor vehicle accidents accounted for 27 percent of the deaths in 1973. Thirteen percent of all industrial deaths were the result of cardiovascular attacks.

Industry division	Number of fatalities	
	1972	1973
Total	650	711
Agriculture	62	66
Mineral extraction	13	18
Construction	105	80
Manufacturing	106	133
Transportation, communication, and utilities*	75	125
Trade	73	75
Finance, insurance, and real estate	11	13
Service	54	73
State and local government*	151	127
Industry not reported	—	1

*Fatalities to employees of publicly operated utilities included in the transportation, communication and utilities division.

Among the major industry divisions, the number of fatalities ranged from 13 in finance, insurance, and real estate to 133 in manufacturing. The largest rise in deaths between 1972 and 1973 were registered by the transportation, communication, and utilities group, where the fatality toll climbed from 75 to 125.

The California survey publication for 1973 presents detailed incidence rates for occupational injuries and illnesses separately for more than 200 industries. Single copies of the 1973 Occupational Injuries and Illnesses Survey, California, may be obtained without charge from the Division of Labor Statistics and Research, P.O. Box 603, San Francisco, CA 94101.

OSHA Reports Occupational Injuries and Illnesses for 1973

Efforts to cut the toll of job deaths, injuries and illnesses through enforcement of the 1970 Occupational Safety and Health Act have made some headway but "there is still a long way to go," according to Assistant Secretary of Labor John S. Stender. Stender, who heads the Occupational Safety and Health Administration, said that the results of a 1973 survey just released show a seven percent drop in job-related fatalities between 1972 and 1973—from 5500 to 5100.

The survey conducted by the Labor Department's Bureau of Labor Statistics is only the second full-year tabulation of job deaths, injury and illness data since implementation of OSHA got under way. The survey also shows an across-the-board reduction in job injury and illness incidence rates in OSHA's five "target industries." The five industries and the percentage re-

ductions from 1972 to 1973 are: meat products, 3.5; lumber and wood products, 5.1; roofing and sheet metal work, 4.2; water transportation services, 2.6; and manufacture of miscellaneous transportation equipment, 2.7.

These industries were selected by OSHA for special inspection emphasis in January of 1972 because of their high work hazard records. These reductions "show beyond any doubt that concentrated attention to job hazards by the labor-management-government team can reduce work risks," Stender said. Conceding that it is difficult to record the full extent of the job health problem even now, Stender said that he believes that a great many job-caused illnesses are being detected or diagnosed.

Stender said that the overall incidence rate revealed by the 1973 BLS survey remained almost the same—10.9 percent in 1972 and 11 percent in 1973 even though there was an increase of 270 recordable cases due principally to an increase in employment of nearly three million in 1973.

Mining and Railroad Statistics

Excluded from coverage under the Act are working conditions over which other Federal agencies have exercised statutory authority affecting occupational safety and health. As of the present time, other Federal agencies have exercised authority over certain working conditions in coal, metal and nonmetal mining and railroad activities. Pending clarification of jurisdictional questions, OSHA did not generally engage in enforcement in those activities during this report period. Data for mining are preliminary and were furnished by the Mining Enforcement and Safety Administration, U.S. Department of the Interior. Data for railroads were furnished by the Federal Railroad Administration, U.S. Department of Transportation.

Mining, with an incidence rate of 12.5, exceeded the all-industry rate. Coal mining, with a rate of 19.1, was much higher than the other two major industry groups in the mining industry—oil and gas extraction (12.8) and metal and nonmetal mining (7.8). Injuries and illnesses in mining were much more likely to result in lost worktime compared with other industries. Of the nearly 76,000 recordable cases in mining, 35,000 or 46 percent involved lost worktime. There were 300 fatalities reported in coal, and metal and nonmetal mining activities during 1973. Railroads had an incidence rate of 8.7 during 1973. An estimated 52,000 injuries and illnesses, of which nearly 200 were fatal, were experienced by railroad employees.

—California AFL-CIO News and U.S. Bureau of Labor Statistics.

AFL-CIO Seeks Expanded Safety and Health Legislation

At its recent mid-winter meeting, the AFL-CIO Executive Council adopted a 32-page report from its Committee on Occupational Safety and Health. The report is a review of federal OSHA's first five years of operations in the areas of administration, enforcement, standards development, inspections, and its review commission. Following are some highlights of the Report:

Administration. Records prove that each OSHA office operates on a different set of administrative rules. The Report cites a six-month period detailing the average time lapse from the day a complaint is received to the day of inspection. The time lapse was 101 days in the Chicago office;

35 days in Atlanta; 28 days in San Francisco and 12 days in the New York City office.

In addition, OSHA press releases emphasize that 25% of the nation's workplaces comply with the safety law, but discounts the fact that 75% are unsafe and violate the law.

Standards. Eighteen criteria documents proposing new health standards have been forwarded to OSHA by the National Institute of Occupational Safety and Health (NIOSH) from 1972 through July 31, 1974. Only three—asbestos, carcinogens and vinyl chloride, have been used in OSHA health standards for American workers.

Inspections. Inconsistencies are the rule. OSHA's classification of hazards as serious or non-serious varies from office to office. The Boston office labeled unguarded woodworking saw blades as non-serious. The same hazard is always considered serious by OSHA's Portland office. A compliance officer out of OSHA's Jacksonville, Fla., office uses his own criteria—it's not serious unless a serious accident has occurred.

OSHA contends that hazards classified as serious get a higher priority. Yet, only 47% of fatal or catastrophic accidents resulted in serious classifications.

Review Commission. The three-member OSHA Review Commission has weakened and delayed enforcement of the law. Its record shows that of 106 key cases in 1973, employers won relief from the Commission in 93 instances. More than 90% of employers' requests for time extension to abate hazards were approved.

The AFL-CIO Executive Council adopted the Report on OSHA and pledged to give it the widest possible dissemination in Congress. The Council also called for an across-the-board strengthening of the job safety law with specific emphasis on the following five points:

- Extension of coverage to all workers, including those employed by Federal, state and local governments, in all workplaces.
- Establishment of full Federal enforcement and the elimination of participation in standards and state enforcement.
- Permission for compliance officers to issue on-the-spot orders prohibiting employees from working where there is danger.
- Requiring full pay for employee representatives for time spent with an OSHA compliance officer during an inspection.
- Transferring the National Institute of Occupational Safety and Health (NIOSH) to the Department of Labor.

Illinois Drops State Program

The Chicago Area Committee on Occupational Safety and Health (CACOSH) has won its two year struggle to regain Federal enforcement of OSHA in the State of Illinois. Following our recent disclosure of negligent, inept law enforcement and political hanky-panky on the part of the Illinois Dept. of Labor and the Industrial Commission, the administration of Governor Dan Walker decided that the state would give up its own program and go back to Federal OSHA.

Details of the transition back to Federal control have not been announced but should be out soon. Rachel Scott, author of the book "Muscle and Blood" and Director of Health and Safety for the Industrial Commission, resigned upon learning of Walker's decision.

The fifteen months in which Illinois has been responsible for OSHA has been marked by confusion, political deals, and outright contempt for the health and safety of working people. Another indication of just how bad things were came out in the papers recently. An inspector is under indictment for soliciting a bribe, and the supervisor of the construction inspectors had to be fired when it was publicized that he had been gathering campaign contributions from employers being inspected. Add to these the Federal report of technically incompetent inspectors, invalid adoption of standards, wholesale patronage appointments, and fines averaging less than \$20, and it makes a pretty grim picture.

CACOSH began to fight to stop the state OSHA program in December, 1972, before it was initially approved. We had asked for public hearings, administrative improvements, and better standards, and all of these were systematically ignored by state officials.

—Health and Safety News (CACOSH)

APPRENTICESHIP PROGRAM CONTINUED

TABLE I

Auto Apprentice Course Materials

1. Work is Dangerous To Your Health, by Jeanne Stelman and Susan Daum.
2. "Report of Industrial Hygiene Surveys in Garages and Auto Body Repair Shops" by Ray A. Rivera, U.S. Environmental Control Administration reprint.
3. NIOSH pamphlets: "Welding Safely", "Working With Industrial Solvents", "Preventing Dermatitis if You Work With Epoxy Resins".
4. Various California General Industry Safety Orders (Title 8) applicable to the Auto Repair Industry.
5. "Rights and Responsibilities of Employees Under Cal/OSHA", U.C. Center for Labor Research and Education.
6. IAM Local 1173 collective bargaining agreement.
7. "Fighting Noise . . . A Manual for Worker Action", and "How to Look at Your Plant", by Urban Planning Aid.
8. "General Industry: OSHA Safety and Health Standards Digest," U.S. Dept. of Labor pamphlet.
9. "Cal/OSHA: The California Occupational Safety and Health Act of 1973", pamphlet summary by California Division of Industrial Safety.
10. Dr. Thomas F. Mancuso, health articles related to Auto Repair Trades, reprinted from The Machinist, 1974.

Audiovisual Materials Used

"Cal/OSHA Opening and Closing Conference", 16mm. film by Labor Occupational Health Project.
"Hidden Hazards", film from NIOSH.
"Have Garages Changed Much?", cartoon from The Machinist.
Slide presentation on respiratory diseases produced by Oil, Chemical and Atomic Workers.
Slide presentation giving overview of Occupational Safety and Health in the U.S. by Dr. Phillip Lee Polakoff, LOHP.

The apprentices had never seen the shop before; prior to January 7 few had even heard of occupational health and safety. They had neither discussed what to look for in carpentry, plumbing, electrical, or parts shops, nor had they worked in one before. During the inspection, the apprentices identified some 50 hazards. (Table II)

Participants felt the course had been invaluable and should be included in all apprenticeship training programs. As one apprentice aptly puts it,

"I look around and see the men that have been exposed to asbestos dust, highly volatile or car-



55 first-year automotive apprentices participated in health and safety course.

cinogenic (cancer-causing) solvents, and I'm glad someone took the trouble to show me some of the hazards involved with automotive work."

The course participants are the only California apprentices to have been issued health and safety training certificates for successfully completing over 20 health and safety training hours. The most immediate, positive result was that 85% of the apprentices discussed the course content on the job with journeymen mechanics.

This pilot course is only a beginning. The future for similar occupational health and safety training programs looks promising. At the 1974 California Conference on Apprenticeship, Gabriel Gillotti (Assistant Regional Director, OSHA, U.S. Dept. of Labor), Ted Moss (Safety Engineer, Guy F. Atkinson Co.), and Dale Marr (Manager, Operating Engineers Local Union #3) all argued to include health and safety training in the apprenticeship courses. Dale Marr emphasized preventive safety: "It has been hard to retrain some to work more safely and if unsafe conditions on the job do exist, to convince them they do not have to work under these conditions . . . *emphasis must be on preventive safety.*" Ted Moss stated the most important part of OSHA is its training requirements: "The best time to provide this training is in the first year of the apprenticeship programs." Gabriel Gillotti felt that planning with an emphasis on training is one of the State system's key tasks.

On February 14, 1975, the California Apprenticeship Council Safety Committee recommended to amend its Administrative Code safety language (Article 4, section 212 (a) (8)) to read: "Provisions for training and education of the apprentices in recognition of occupational safety and health hazards including safe work practices." Due to the enthusiasm generated by the Pittsburg course, Bob Fowler arranged with Pete Gobbo to begin a second demonstration apprenticeship course on March 8, this time for 70 Carpet, Linoleum, and Soft Tile Trades apprentices. The Labor Occupational Health Project is also developing health and safety materials for the automotive apprentices' second, third, and fourth training years. 50% of these materials would apply to specific trades; 50% would cover overlapping information.

At present the Labor Occupational Health Project, in cooperation with state, federal and union officials, is preparing a grant proposal for submission to the

Department of Labor. The proposal will request funds to develop health and safety materials for all apprenticeable trades. Besides identifying hazards, the materials would indicate measures to control or prevent them. The materials could be useful to unions, employers, etc. in addition to apprenticeship programs and vocational schools.

The occupational health and safety picture is suddenly a little brighter. Hopefully the way paved by the Labor Occupational Health Project's pilot health and safety apprenticeship programs will encourage others and will ultimately produce a significant change in occupational health and safety.

TABLE II

Hazards Identified By Apprentices

Woodshop

- No guards on table saws or cut-off saw
- No guards on lathe belt drive
- Inadequate ventilation
- Poor housekeeping
- Fire Extinguishers not properly marked
- Fire Extinguishers not accessible
- Aisles not marked
- Inadequate lighting
- Equipment not marked on electrical breaker box
- No way to lock circuit when working (servicing) on equipment
- No First-Aid station

Paint Shop

- NO SMOKING signs not posted on entry doors
- Improper solvent storage
- Smoking obviously allowed even though 4 signs are posted
- Poor housekeeping
- No evidence of respirators

Plumbing Shop

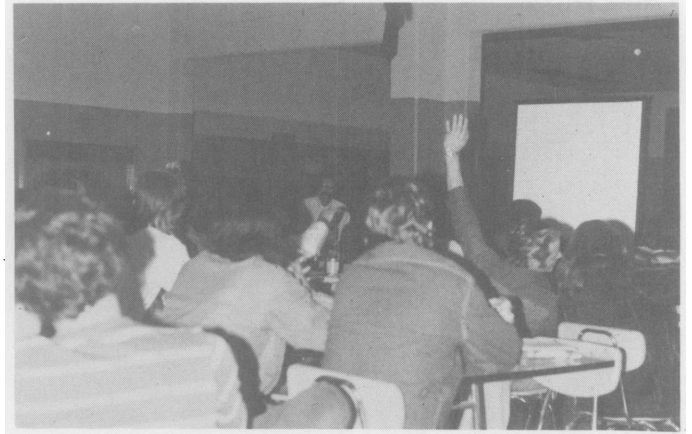
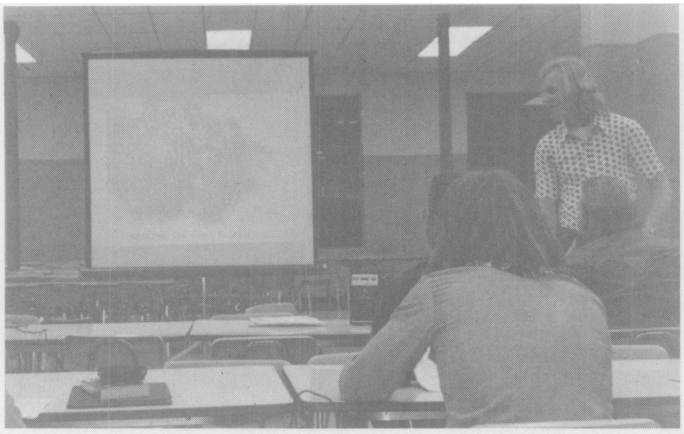
- Firehose is creating a hazard
- Improper storage of materials
- Unguarded machinery
- No safety signs posted
- Makeshift face shield over grinder
- Grinders and drill presses not anchored to floor
- Coffee pot with two-wire plug
- Very poor housekeeping
- Improper storage of high pressure cylinders
- Shields missing on grinders
- Lines not clear on oxygen-acetylene torch
- Overloaded circuits
- Improper container for used shop rags
- Heater not vented
- No safety instructions on arc-welder

Electronics Shop

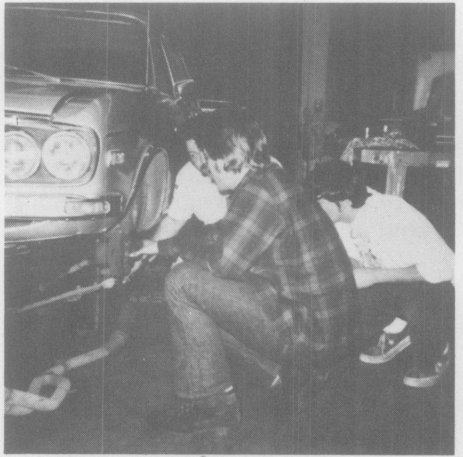
- Improper chemical storage
- Unsafe soldering irons
- Very poor housekeeping
- Very poor material storage

Miscellaneous Areas

- 55 gallon drums of flammables stored without proper grounding
- First Aid station not marked
- First Aid box not stocked
- Uneven surface at entry to break room (tripping hazard)
- Electrical outlet located close to urinal in men's room
- Fire Extinguisher inspections not up to date
- Complete lack of Health or Safety instruction signs
- No OSHA or Cal/OSHA posters
- No OSHA 102 form posted



—Health and Safety Instruction



—On-the-Job Training



—Maintenance Facility Inspection



The staff of the Labor Occupational Health Project fully recognizes and appreciates the contributions made to the Auto Repair Apprentice Health and Safety pilot training course by the following people:

John Christiansen—Pittsburg Unified School District
 Terry Downey—Auto Repair Trades Joint Apprenticeship Council
 Manny Francis—IAM District 190
 Gerald La Perle—Pittsburg Unified School District
 John Mendelhoff—Urban Planning Aid, Cambridge, Mass.
 Charles Priest—Contra Costa County Regional Occupational Program
 Bob Sole—Auto Repair Apprentice Instructor
 Bill Stock—Federal OSHA

DOCTOR'S CORNER

The Hazards of Fire Fighting

Phillip L. Polakoff, M.D.



We are all familiar with the fact that fire fighting is a dangerous job. Now the most hazardous occupation, it exceeds even underground mining in its death toll . . . 104 per 100,000 professionals. And, it can be assumed that the estimated two million volunteers also suffer a comparable toll. Significant technical advances, improvements in respiratory protection devices, more widely used protective clothing, and improved communication systems have contributed to a reduction of fire fighters' risk of disabling injury and disease. Yet, the recorded occupation related injuries have nearly doubled in the last six years. Presently, thirty-seven out of every one hundred firemen are injured in the line of duty.

In spite of the alarming incidence rates among fire fighters, compensation for disabled firemen is astonishingly inconsistent. Whereas most injured firemen are protected against excessive financial loss, those firemen disabled by disease are compensated only if the occupation is proven to be the primary cause of the disease. The relationship between an injury and the job is usually obvious; for example, a fireman may break an arm or leg and has it treated. His request for financial and other compensation is rarely contested. However, a fireman disabled by a respiratory, cardiac, or neuropsychiatric disease is hard pressed to prove that his occupation was the primary cause of such disablement. As a matter of fact, compensation is often denied because the fireman cannot disprove that his disease may have been aggravated by his work environment, rather than such being the direct cause.

Many of us realize how difficult it is to attribute a disease to any one specific set of conditions. Essential record-keeping procedures which could identify clear causal relationships between fire fighting and diseases are still nonexistent. In addition, fire fighting related diseases are oftentimes undetected until the victims are seriously disabled or dead.

The fireman is not only endangered while present at the actual fire site. A surprising number of disabling accidents may occur elsewhere. Many occur at the station headquarters while firemen tend to a variety of equipment and apparatus. A fireman can wrench his back while loading hose, or he can injure himself by

falling over his own hooks. At the fire site, he is exposed to extreme degrees of heat, excessive cold and moisture, sharp force (broken glass, jagged timbers and metals), blasts, smoke and toxic chemicals and gases. However, fire fighting related diseases are less easy to identify and link causally to the occupation. Yet, if left untreated, they may be potentially fatal or render the victim unfit to work and endanger others.

RESPIRATORY DISEASES

Of all diseases related to fire department work, respiratory system diseases are the most common. Asphyxia (lack of oxygen) may permanently damage the lungs and brain if frequently experienced. Pneumonia, lung infection, reduces the victim's resistance to cold, moisture, heat and stress by decreasing breathing capacity caused by lung scarring. Eventually, the development of such diseases could bring about severe disability or death.

Most occupation related respiratory diseases are caused by pulmonary (lung) irritant gases from smoke or chlorine-type gas leaks. Depending upon the gases' concentration, symptoms range from nasal irritation, to bronchial and pulmonary vein constriction, and eventually to pulmonary edema (excessive accumulation of fluid in the lungs) and hemorrhaging.



Effects of Smoke Exposure

Most of us are familiar with smoke's initial irritating effects: the eyes water; the nose runs; there is coughing, gagging and occasional vomiting. Frequent exposure decreases the lung's functioning capacity, causes chronic sinusitis accompanied by headaches, frequent colds, chronic coughing, and fibrosis (lung scarring). Pulmonary irritant gases in smoke seem the most likely cause of lung damage resulting from smoke inhalation. Mere smoke particles are either not so toxic as the accompanying gases or are prevented from reaching the lungs by the mucous membrane's filtering action.

Smoke always contains carbon monoxide and carbon dioxide plus other toxic gases produced by burning specific materials. Carbon monoxide combines more readily with hemoglobin (blood) than does oxygen, thereby crowding out the blood's oxygen supply. This gas remains a major foe in spite of increased use of respiratory protective devices. Carbon dioxide, although less dangerous than carbon monoxide, is toxic to the central nervous system in high concentrations (8-10%). Low concentrations stimulate the body's absorption of other, more harmful gases. Other toxic pulmonary irritant gases are combustion products of



synthetic textiles such as polyester resins (hydrogen chloride), teflon (actafluoroisobutylene), and nonsynthetic materials such as nitro cellulose (nitrogen oxides), as well as silk and wool (hydrogen chloride, films, and ammonia).

Warning Signals and Prevention Methods

The early symptoms of respiratory ailments are persistent coughing, shortness of breath, easy fatigue, or coughing up of brownish or bright red blood. An immediate physical examination and chest x-ray should be given to the individual exhibiting these symptoms. Subsequent exposure to smoke, fumes and stress should be minimized or completely avoided. Those coughing up blood should have repeated physical examinations at regular intervals.

To prevent or at least diminish respiratory problems among fire fighters, further research is needed to more clearly identify the effect of the occupational environment's effect on the human respiratory system. The following information-gathering should be considered:

- (1) detailed site and laboratory studies on the physiological effects of smoke exposure on humans.
- (2) analysis of information gathered on fire fighters with respiratory disease symptoms, compared with information about their work environment.
- (3) information on the effects of chronic exposure to smoke components not producing immediate acute symptoms. The objective would be to determine whether a 10, 15, or 20 year fire fighting

career results in a higher incidence of respiratory diseases than present in the general population. (4) establish improved methods of sharing new information about fire fighting related diseases to the medical and health professions.

CARDIAC DISEASE

The heart is a mechanical pump powered by a living muscle which requires a vital supply of food and oxygen. Factors such as high blood pressure, decreased breathing capacity, smoking, diabetes, etc., interferes with the arteries' ability to adequately supply the heart with its needed food and oxygen supplies. The result is disability and eventual death from heart failure.

Fire fighters face a greater risk of cardiac disease than the population in general. The majority of fire fighters are males, and men suffer greater incidences of heart disease than women. The incidence of heart disease among firemen is also greater than for men within comparable age ranges. Cardiac disease accounts for between 25%-75% of all fire fighters' occupational related deaths, and for 50% of the occupational compensation.

Exposed to severe life-threatening stresses, the fire fighter's body responds by pouring blood pressure-raising chemicals into the blood stream. By constricting the blood vessels leading to the heart and cutting the flow of blood and oxygen, these chemicals increase the heart's pumping load. Simultaneously, other chemicals pour into the blood stream increasing

the blood's clotting capacity. A possible result of this additional burden could be a fatal blood clot in an artery leading to the heart.

The fireman's working environment is also damaging to his heart. Extreme heat and humidity has been shown to increase the work of the heart by at least fifty percent. Furthermore, firemen frequently go from extreme cold to extreme heat; extreme cold constricts the coronary (heart) arteries, thereby increasing the heart's workload. The work environment is also at times characterized by a lack of oxygen which causes heart cell necrosis (death of heart cells). An example is exposure to carbon monoxide which prevents or blocks oxygen from getting to the heart, thus leading to heart cell necrosis.

Warning Signals and Preventive Measures

Similar to respiratory diseases, heart disease is a life or death matter. Few people with heart disease die without some sort of previous warning. A most dramatic warning sign is chest pains which may extend into the left arm. This is usually a sharp pain which seems to start just beneath the breast bone or sternum. Immediate rest is the best remedy for such a condition. Shortness of breath is another early sign of a possible heart ailment. Other signs of cardiovascular disease include ankle swelling which indicates the heart's inability to carry its load; and high blood pressure indicating the blood vessels are not supplying the heart with sufficient food and oxygen.

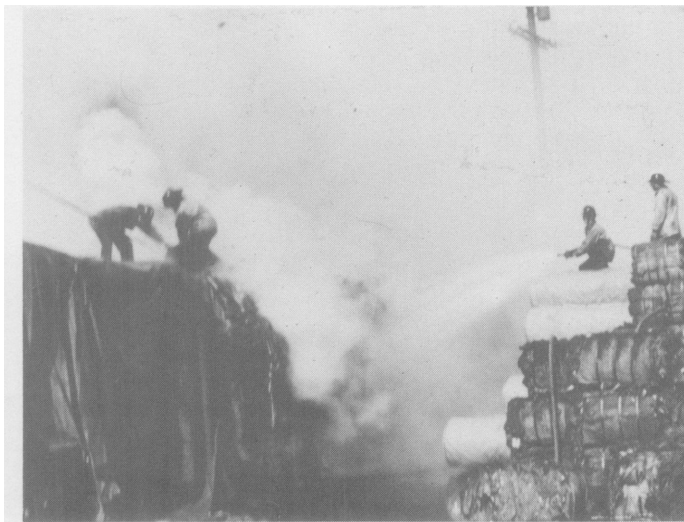
Associated with these danger signals is the clamping down on the arteries so that the arms and legs do not get enough blood. This problem occurs in colder parts of the country where many firemen may be sensitive to cold weather. Such exposure could result in painful limbs or eventual gangrene.

These warning signs of diseases of heart and blood vessels cannot be disregarded. The fireman who notices any of these symptoms should have a complete physical examination. The recommendations of the examining physician must be closely followed. Furthermore, additional preventive measures should be taken for all firemen to cut down on the higher frequency rate of coronary heart disease. First, it is the conviction of many that a safety officer should be present at every fire site to ensure the safety of all firemen. His functions should include the care and maintenance of equipment. Eventually, his function would be expanded to include carrying portable monitoring equipment into a building to determine the most safe and effective equipment to use in each situation.

The experience of the Los Angeles Fire Department has clearly demonstrated that improved physical fitness programming will potentially weed out those firemen with coronary heart disease. I would therefore strongly recommend that a physical fitness program be implemented in every department. I would also like to see a completely computerized health program for every fire fighter. Such a program would include baseline information from the time the fireman enters the force and would include the results of periodic monitoring during fire-fighting activities. These types of programs would, hopefully, reduce the fire fighter's risk of exposure by monitoring both the conditions causing the disease as well as the health of individual firemen.

NEUROPSYCHIATRIC DISABILITIES

The term "neuropsychiatric" is widely used to talk about both "psychiatric" and "neurologic" problems. No single illness presents a greater problem in judging the relationship of disease to occupation. It is my belief that this form of occupational disease is probably the most prevalent but the least studied. In most cases the basic disease is simply aggravated by the work environment of the fireman, rather than being directly caused by his occupation. The fireman is subject to many stresses and strains uncommon to other workers. By the very nature of his job, the fireman spends a great deal of his time just waiting. Boredom is a sufficient reason for many of the abnormal emotional reactions that appear.



In contrast, the opposite type of strain is imposed by his emergency services. He is under a great deal of physical and emotional stress. There are decisions of importance which must be made rapidly and correctly. His life and the lives of others may depend on doing the proper thing at the proper time. The result of this odd combination of boredom and stress can be seen in the many neuropsychiatric symptoms in any group of fire fighters. These symptoms vary from mild irritability to obvious mental illness.

More subtle emotional changes occur in a depressed individual. He gradually becomes quieter, less talkative and less friendly. He tends to withdraw from association with the other men. He may become so preoccupied with his real or imagined troubles as to be out of contact with his surroundings. The hazards of having such a man in emergency situations is clear. The teamwork so essential in fire service work is equally endangered by either the depressed or agitated person.

There may also be gradual, almost unnoticed, mental deterioration. This could arise due to aging or to some of the factors mentioned above. Alcoholism is another factor leading to mental deterioration. This is usually a symptom of emotional disorder rather than a cause. At the fire site, even a partially intoxicated fireman is an obvious risk. His judgment is poor, coordination is affected, and he tires rapidly.

To diminish the incidence of debilitating neuropsychiatric symptoms, a fire department should include a comprehensive psychiatric appraisal of each candidate in its screening procedures. Finally, if during a fireman's career, he develops signs of neuropsychiatric difficulties, it is imperative that the department have the man seen by an outside mental health specialist.

Firemen Pay Bitter Price

On October 4, 1973, Walter Nunes spotted a closed steel cylinder on a lot in Belmont, California. He thought it would make a good fireplace for a friend, so he removed the pipe fittings at the top of the tank whereupon liquid and gas began to escape. Overcome by severe choking from fumes produced by the liquid draining out of the canister, Nunes called the fire department. By the time the emergency ended, 15 civilians, several firemen, and Walter Nunes were in the hospital. Two of the firemen have been placed on retired disability status for lung problems. Two others still off work might never return to the force.

The canister, supposedly empty and harmless, was left behind when Allied Equities' subsidiary NAMCO had moved to Milpitas two and one-half years before. By most accounts the cylinder contained a colorless, slightly chloroform-smelling toxic gas called methyl bromide, mixed with tear gas to warn of its presence in case of accident. It is used as a household insecticide fumigant and to sterilize soil for high-income crops such as flowers and strawberries.

Gary Rego, one of the firemen, who doesn't yet know whether he will return to work, was exposed for 20 to 30 minutes. He wore a chemical suit and an air-fed rubber face mask. The gas ate through both the suit and the rubber mask. Reno continues to suffer in varying degrees from chest pains, coughing, severe headaches, dizziness, irritability, sleeplessness, chronic exhaustion. Doctors have recently discovered some damage to the left side of the brain.

The Belmont incident is not unique. What happened is typical, in a way, of fire fighters' experiences across the country. In 1973, nearly one-tenth of the injuries reported were caused by inhalation of toxic gases.

—Los Angeles Times

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