The ADVISOR

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH 5600 Fishers Lane, Rockville, Md. 20852

No. 5 — January 1973

"Intellectual passion drives out sensuality."
Leonardo da Vinci, 1452-1519

WE BLUE IT!

Faces of the NIOSH Office of Public Information staff are as "hot pink" as the little brochure called "A Directory of NIOSH Services and Activities." The first listing in this small directory is for the Office of Public Information — and our phone number is listed wrong! And what's more, we developed and proofread the thing in the first place. The number, for those of you who have a copy, should read (301) 443-2140 — NOT 433-2140.

This issue of The ADVISOR is being mailed with a freshly corrected issue of the Directory of NIOSH Services and Activities. We urge you to discard or correct the incorrect copy. Forgive us for the only mistake we ever maid!

Office of Public Information

NIOSH GETS LEAD OUT . . .

NIOSH has sent to the Department of Labor the criteria for a recommended standard governing the exposure of workers to inorganic lead.

NIOSH has recommended a maximum occupational exposure level of 0.15 milligrams of inorganic lead per cubic meter as a time weighted average exposure over an eight-hour workday. The present standard for occupational exposure being enforced by the Department of Labor's Occupational Safety and Health Administration is .20 milligrams of inorganic lead per cubic meter. The term "inorganic lead," as defined by the NIOSH recommendation, refers to lead oxides, metallic lead, and lead salts, including organic salts, but excluding lead arsenate. Organic lead compounds, such as tetraethyl lead, will be covered by future NIOSH recommendations.

The document recommends specific procedures for collecting and analyzing environmental samples of lead in the workplace. It also recommends procedures, including a time schedule, for medically monitoring lead exposure in workers through the analysis of blood or urine samples. The proposed standard includes recommendations concerning sanitation and work practices, personal protective clothing and equipment, the posting of warnings in the workplace, and recordkeeping.

Over 700,000 workers are estimated to be exposed to inorganic lead products in such industries as the manufacture of batteries, paint, and electronic equipment, printing, foundry operations, and others. Symptoms of lead poisoning include abdominal and muscular pains, headaches, vomiting, loss of appetite and weight, muscle weakness, and tremors.

. . . AND ULTRAVIOLET RADIATION

NIOSH has also sent to the Department of Labor the criteria for a recommended standard governing the exposure of workers to ultraviolet radiation.

For that portion of the electromagnetic spectrum from 200 to 315 nanometers (a measurement of wave length), NIOSH has set forth a formula incorporating the relative biological effects of ultraviolet radiation for use in determining permissible exposure times over an eight hour period. According to NIOSH researchers, it is this portion of the spectrum that poses the greatest threat of injury to skin and eyes from ultraviolet radiation.

For that portion of the electromagnetic spectrum of 315 to 400 nanometers, a maximum limit of one milliwatt of ultraviolet radiation per square centimeter is recommended for exposures exceeding 1000 seconds. For 1000 seconds or less, the total radiant energy would be limited to 1000 milliwatt-seconds (one joule) per square centimeter.

The document points out present technical problems in conducting accurate measurement of broadband ultraviolet energy and lists three different approaches for determining compliance with the proposed standard: utilization of available instrumentation wherever applicable; utilization of known data on ultraviolet energy output, such as from lamps; and utilization of work practice guidelines when suitable instrumentation or energy output data are not available. The proposed standard is not intended for application to lasers.

Recommendations are also included for protective clothing, medical examinations, work practices, and labeling and warning considerations.

Industrial processes involving ultraviolet radiation production include welding and plasma torch operations, photoengraving, vitamin and drug production, hot metal operations, chemical synthesis, medical diagnosis, germicidal and sterilization techniques, and many others.

A limited number of single copies of the recommendations for inorganic lead and ultraviolet radiation are available from

the National Institute for Occupational Safety and Health, Post Office Building, Room 536, Cincinnati, Ohio 45202.

Other criteria documents expected to be completed early in calendar year 1973 include silica, inorganic mercury (excluding alkyl compounds) and coke oven emissions.

WHAT'S NEW AT THE TCL?

The Testing and Certification Laboratory, located at NIOSH's Appalachian Center for Occupational Safety and Health in Morgantown, West Virginia, has tested and certified several respiratory protective devices for use in industry, including coal mines.

These approvals are made by NIOSH under the Occupational Safety and Health Act and the Federal Coal Mine Health and Safety Act of 1969. Earlier respirator approvals (those having certification numbers beginning with *BM*) had been granted by the Bureau of Mines. The present ones are granted jointly by NIOSH and the Bureau of Mines under test procedures given in the March 25, 1972 *Federal Register* (vol. 37, p. 6244). The new certifications are identified by *TC*, the applicable updated schedule number, and the individual certification number. Items certified bear both HEW and Department of the Interior, Bureau of Mines seals.

The respiratory protective devices that have been approved, their certification numbers, manufacturers, and the dates are as follows:

Mod. 8710 disposable respirator against pneumoconiosis- and fibrosis-producing dusts. TC-21C-132, 3M Co., 24 May '72

MSA part no. 459440 respirator with type F filters against dusts and mists having a TLV not less than 0.05 mg/M^3 or 2 mppcf and against asbestos-containing dusts and mists, TC-21C-133, MSA, 4 Oct. '72

MSA part no. 459433 respirator with GMA cartridges against not more than 0.1% organic vapors by volume, also approved for type F filters, TC-23C-40, MSA, 13 Oct. '72

MSA part no. 459434 respirator with GMB cartridges against not more than 10 ppm chlorine, 50 ppm sulfur dioxide, or 50 ppm hydrogen chloride, also approved for type F filters, TC-23C-41, MSA, 13 Oct. '72

MSA part no. 459438 respirator with type S filters for protection against dusts, fumes, and mists having a TLV not less than 0.05 mg/M^3 or 2 mppcf; radon daughters attached to dusts, fumes, and mists; and asbestos-containing dusts and mists, TC-21C-134, MSA, 27 Oct. '72

MSA part no. 459439 respirator with type H filters for protection against dusts, fumes, and mists having a TLV less than 0.05 mg/M^3 and against radionuclides, TC-21C-135, MSA, 27 Oct. '72

For further information about the respirator testing and certification program write:

Patricia Gussey, Chief, Respirator Section
NIOSH Testing and Certification Laboratory
Appalachian Center for Occupational Safety and Health
944 Chestnut Ridge Rd.
Morgantown, West Va. 26505

BRONCHOPULMONARY DISORDERS SUBJECT OF NIOSH SEMINAR

NIOSH's Office of Extramural Activities (OEA) recently sponsored a two-day meeting involving researchers from NIOSH's Cincinnati and Morgantown laboratories and recipients of NIOSH research grants concerned with bronchopulmonary disorders. The grantees represented were the University of Cincinnati, Stanford University, West Virginia University, and the University of Rochester. Also present were attendees and panelists from relevant programs in medical educational institutions.

The seminar, held November 16-17 at the NIOSH Appalachian Center for Occupational Safety and Health in Morgantown, West Va., enabled researchers from widely scattered areas of the country to meet and exchange ideas on the needs and latest techniques used with occupational respiratory disorders. Especially useful was the opportunity for each scientist to see how his own work fits into the overall pattern of research on industrially related bronchopulmonary disorders, particularly on coal workers' pneumoconiosis — "black lung disease."

According to Dr. P. G. Rentos, Chief of OEA's Program Development and Evaluation Branch, similar seminars are planned in other technical areas in which NIOSH provides research support.

HEW NAMES NEW MEMBERS FOR COAL MINE HEALTH COUNCIL

Before leaving for his new Cabinet post, Secretary of Health, Education, and Welfare Elliot L. Richardson named five new members to the Coal Mine Health Research Advisory Council. They fill vacancies created by a resignation and by four expired terms.

The appointees to terms expiring June 30, 1975 are Louis T. Ellison, M.D., Director, Cardiopulmonary Laboratory of the Medical College of Georgia (Augusta) and William P. McElwain, M.D., Commissioner of Health, Kentucky State Department of Health. Appointed to terms expiring June 30, 1976, are David M. Anderson, Ph.D., Manager, Environmental Quality Control, Bethlehem Steel Corp., Allan Eli Green, Jr., M.D., Vice-chief of Medical Staff, Glenwood Hospital, Monroe, La., and Jean E. Todd, M.D., Director of Surgical Pathology, West Virginia University Medical Center, Morgantown. The Secretary also extended the term of E. Cuyler Hammond, Sc.D., Vice-president of the American Cancer Society, until June 30, 1974, in order to provide continuity and skill in particular Council functions.

The Coal Mine Health Research Advisory Council was established in May 1970 under terms of the Federal Coal Mine Health and Safety Act. The Council usually meets three times a year to consult with the Secretary and make recommendations relating to Departmental coal health research. It is chaired by Paul A. Yu, M.D., Head of the Cardiology Unit, Strong Memorial Hospital, Rochester, N.Y.

NIOSH'S BIG DIVISION

NIOSH's Division of Laboratories and Criteria Development (DLCD) is directed by Associate Director Dr. Edward J. Fairchild, II, assisted by the Division's Deputy Director, John M. Bryant. With a staff of over 190, this division is NIOSH's largest and is the focal point for NIOSH in-house research. It is also the largest division in terms of variety, with research ranging from physiology and toxicology to engineering and psychology.

Like many other NIOSH divisions, DLCD renders supportive services to other NIOSH components and gathers data for determining safe levels of exposure to hazardous substances. Much of its effort is devoted to developing, updating, evaluating, and encouraging the acceptance of new industrial hygiene measuring devices and techniques. It also certifies new devices and calibrates instruments used by NIOSH and by OSHA compliance officers.

DLCD research reaches into once uncharted areas. For example, NIOSH scientists are studying physiological consequences of insults to the body, such as, heat, vibration, and those impairing pulmonary function. Other Division scientists are studying the effects of noise and electromagnetic radiation (which includes radio and "light" frequencies) on the worker, paying special attention to the effects of laser radiation. And a team of psychologists, toxicologists, and engineers is studying the psychological, behavioral, and motivational factors that affect employee health and on-the-job performance. One of the aims is to find if exposure to certain chemical and physical agents results in behavioral and neurological changes.

The Division of Laboratories and Criteria Development is composed of six branches, each with different missions, described below.

The DLCD *Toxicology Branch,* under Dr. Herbert E. Stokinger, grew largely out of the Federal Government's participation on the Threshold Limits Committee of the American Conference of Governmental Industrial Hygienists. The Committee was founded in 1946 and had as its purpose the establishment of safe exposure levels for hazards in the workplace. This Branch, now numbering about 40, includes biochemists, physical chemists, organic chemists, toxicologists, pathologists, physiologists, and pharmacologists.

The Toxicology Branch consists of a Pathology Section, a Bio-chemistry Section, a Toxicity Evaluation Services Section, a Toxicity Mechanisms Section, and an Immunochemistry Section. The Bio-chemistry Section works in four areas: a clinical chemical services group is developing new analytical methods for making occupational health toxicity determinations, a biochemical mechanisms group is studying the breakdown products of body enzymes during bronchospasms, a biophysics group is analyzing reactions to dusts and how they produce toxic reactions, and a pharmacodynamics group is studying mechanisms of toxic action of beryllium, nickel, chromium, and cadmium at the present time. The Toxicity Evaluation Services Section obtains data on new compounds and studies possible toxic responses from inhalation, ingestion, and lifetime exposure. The Toxic Mechanisms Section studies toxicology in considerable depth — how beryllium, carbon disulphide, fluorocarbons, furanocoumarins, and oil mists (to name only a few) can accomplish debilitating effects in man. Finally, the Immunochemistry Section concentrates on identifying atopic reactor hypersensitivities — allergy-like reactions in some people to specific industrial chemicals.

This branch's work on the control of occupational hazards includes validation of industrial air standards, such as for cadmium, in work with various nongovernmental committees. Appraisal of new hazards has included exposing animals to proteolytic enzymes — protein-splitting enzymes now found in some laundry detergents. This study seems to indicate that present limits offer a sufficient margin of safety to all but the most sensitive employees.

Hazard evaluation support work was performed for industry to assess the pathologic potential of enriched manganese ore, of previously unevaluated cesium and rubidium compounds, and of an unusual form of silica.

Research on toxic mechanisms involving trace elements has had some most interesting results. The presence of small amounts of selenium salts, for example, prevents kidney damage with the administration of mercury chloride to rats. Investigation showed that the neutralizing effect is due to the formation of an inactive compound, mercury selenide. An equally important finding is that inclusion bodies containing mercury and selenium formed in cell nuclei are not accompanied by cancer. Other trace element studies, those involving chromium and zinc, have consequences for understanding nutritional deficiencies and diabetes.

Research on dust diseases of the lung showed that the response to sterile bituminous dust in germ free rats parallels the response under normal conditions. This indicates that bacterial flora may not have a significant role in coal miners' pneumoconiosis.

The Physical and Chemical Analysis Branch, under the direction of John V. Crable, has the mission of providing analytical services to various groups within and outside of NIOSH and of supplying analytical methods needed for measuring standards for occupational exposures. The Branch also provides analytical support for in-house research, which in turn supplies an input for NIOSH's criteria document program. To carry out its mission the Branch has a staff of 24 people in Cincinnati and 7 in Salt Lake City.

The current major projects of the Branch are the following:

1) Characterizing coal tar pitch volatiles, recommending standard analytical and sampling methods for them, and evaluating the present exposure standards.
2) Standardizing methods of analyzing airborne contaminants generated from heating in the manufacture, fabrication, and use of commercial plastics.
3) Developing and evaluating sampling and analytical methodology and instrumentation for measuring inorganic substances in workplace air and in the worker's blood, urine, and tissue.
4) The same as 3) for measuring organic substances.
5) Analyzing lung tissue of coal miners and nonminers to relate abnormal coal, total dust, free silica, hydroxyproline, and trace element concentrations in a coal miner's lung to

total pathology, work history, and cause of death.

6) Supplying analytical services at the Cincinnati and Salt Lake City laboratories to NIOSH (approximately 25,000 analyses last year) and OSHA.
7) Developing devices containing solid sorbents for sampling and analyzing airborne toxic substances.

The Physical and Chemical Analysis Branch is interested in determining the value and practicality of various laboratory techniques. An example is the use of the anodic stripping voltammeter (a quantitative measuring instrument) for blood analysis from a sample so small that it can be obtained from a pinprick. Spark source mass spectrometry, a technique that can analyze for 54 different elements at a time, has been evaluated on about 25 substances, including welding dust, fly ash, and lung tissue. A photo-dynamic bioassay emission spectral index is being developed and evaluated to express the carcinogenic hazard of polynuclear hydrocarbons. Electron spectroscopy for chemical analysis (ESCA) has been evaluated for determining a wide range of contaminants simultaneously in a given sample; 25 samples of lung tissue, coal, minerals, and dust, have been analyzed by it. Ion selective electrodes and metal ion catalysis procedures are being developed for the analysis of 15 widely varied substances, including acids, organic solvents, and metals.

Over 30 analytical methods have now been written by this Branch for publication by NIOSH in early 1973. These include methods for measuring the presence of airborne contaminants — organic solvents, quartz, carbon monoxide, beryllium, cadmium, ozone, and oil mists. Also included are methods for biological monitoring, such as those for measuring lead and mercury in the blood and urine, carbon monoxide in blood, and fluoride and selenium in urine.

The Division's *Physiology and Ergonomics Branch,* under Dr. Francis, N. Dukes-Dobos, is interested in stressful work conditions and particularly interested in physiological indicators of occupational insults to the body. Specific stresses studied are heat, vibration, and excessive physical labor, especially in connection with materials handling and in combination with mental stress. This branch's staff numbers 11 and includes a physician, physiologists, bioengineers, and biologists.

The staff of the Branch has been involved for many years in laboratory and field studies of hot work environments. It recently developed a novel system making it possible to express permissible exposure limits for heat at different work intensities in a form that is simpler to use than any previous system. The American Conference of Governmental Industrial Hygienists (ACGIH) adopted the new system tentatively as a Threshold Limit Value (TLV) for work in hot environments. However, physiological measurements will have to be further simplified before this system will be useful as an industry-wide mandatory standard. An interim work practices standard would eliminate the requirement for industry to do physiological monitoring. Research is now under way to find simple techniques for monitoring both environmental heat and the heat that is generated in the body by physical work.

In other studies, NIOSH is assessing whether there is a significant difference in heat tolerance among different worker populations, depending on the geographical location of the industry. Workers in the southern part of the U.S. may be more acclimated to heat than in the north and men may tolerate more or less heat than women.

Physiologists are also studying the interactions of different stresses — how the presence of certain toxic substances affects the tolerance to heat stress.

Acute exposure of workers to industrial vibration has been identified as a health and safety hazard from studies performed mainly in Europe and Asia. These and domestic military aerospace studies show that vibration can produce potentially harmful changes in nearly every biological system in the human body (i.e. cardiovascular, gastrointenstinal, nervous, skeletal, and muscular); at least one disease (Raynaud's Disease) is associated with exposure to vibration. Little is known, however, about the consequences for health and safety of industrial vibration in the U.S.

The Physiology and Ergonomics Branch researchers are presently 1) working on identifying the extent of the industrial vibration problem in U.S. industry, 2) conducting laboratory studies to ascertain the consequences to health and safety of chronic vibration exposure by simulating industrial exposures, and 3) conducting industrial field studies in order to analyze and characterize the vibration to which workers are exposed.

These NIOSH researchers have conducted over 45 on-site plant and field surveys at various industries throughout the U.S. Occupations include operating construction equipment, over-the-road truck and bus driving, farming, forestry, and railroad operation. A conservative estimate, based upon these surveys, is that 7 to 8 million workers are exposed to significant vibration in the U.S. Some of the findings of the surveys correlate well with observations of other investigators who performed studies on workers in foreign industries.

An extensive bibliography of references to domestic and foreign studies, *Technical Report* #77, has been prepared.

Researchers at the NIOSH Cincinnati laboratories are presently conducting chronic vibration exposure experiments, in a joint study, utilizing the facilities of the Aerospace Medical Research Laboratory at the Wright Patterson Air Force Base. Members of the Physiology and Ergonomics staff are also involved in international efforts to establish criteria for safe levels of exposure to vibration as members of International Standards Organization committees.

Materials handling, and especially lifting objects, is known to cause a great number of injuries in industry. The Physiology and Ergonomics Branch is involved in research to determine, on one hand, the forces that human tissues can tolerate without harmful effects and, on the other, the forces that act upon the body while it is lifting objects of different weights and sizes. Knowledge of these relationships will help in the design of work practices that can prevent injuries leading to low back pain, common among industrial workers.

Researchers in the Physiology and Ergonomics Branch are also conducting a joint study with the Toxicology and the Behaviorial and Motivational Factors Branches. It has been observed that many industrial accidents occur when workers are suffering from excessive fatigue. This project has the goal of assessing the chronic effects of various stress-producing

conditions on industrial workers. It will establish simple physiological, biochemical, and psychological tests that can be used by industry to accurately assess whether a worker is, in fact, exposed to excessive stress.

The *Engineering Branch,* headed by Clark M. Humphries, consists of a staff of 31 at Cincinnati and nearly 50 at the Testing and Certification Laboratory (TCL) at NIOSH's Appalachian Center for Occupational Safety and Health, Morgantown, West Virginia. Its purpose is to conduct engineering research on control of hazards, to develop and evaluate industrial hygiene sampling devices, to test and certify personal protective devices and instruments, and to maintain and calibrate instruments used by Department of Labor compliance officers.

The Engineering Branch is divided into sections performing the following functions: 1) gas and vapor sampling, 2) particulate sampling, 3) ventilation, respirator, and heat stress instrumentation, 4) safety engineering, and 5) instrument maintenance and calibration.

This Branch tests direct reading instruments and indicator tubes for identifying and quantifying vapor contamination. It has developed a nylon personal sampler and a sampler pump, which together offer unobtrusive sampling of air at the worker's breathing zone continuously over an 8-hour workday. These devices are now being tested and the consequences of pump pulsation determined.

Among the work that the Branch has contracted to be done is the development of criteria for industrial ventilation to control contaminants. Performance requirements and test procedures are being written for respirators; they will soon be undergoing testing at the Testing and Certification Laboratory.

The Branch is also studying instrumentation for determining heat stress, which is a function of the integration of a series of temperature, humidity, air motion, and thermal radiation flux measurements.

The Testing and Certification Laboratory at Morgantown, under Robert Schutz, is a major activity of the Engineering Branch. There both personal protective devices and sampling instruments are tested for certification. This certification will permit the manufacturer of a certified device to offer that model as a HEW-certified device. (See the TCL story in the December issue of the *Advisor.*)

The DLCD *Behavioral and Motivational Factors Branch,* under Dr. Alexander Cohen, performs research on the psychological, behavioral and motivational factors that may affect worker health and safety. The value of this research is readily apparent when one considers the array of human factors that may be contributory to an accident and the wide differences among workers in their ability to cope with job-related stress that can lead to mental or physical problems. The Branch has a staff of 14, which includes psychologists (of the industrial, experimental and human factors varieties), behavioral toxicologists, bioengineers, and technicians.

This branch has several major research objectives. One is to determine if adverse behavioral and neurological changes can be caused by exposure to chemical and physical agents at the recommended limits for health protection, or even below them. These studies may indicate if such changes can serve as early warnings of potential occupational diseases and in assessing the behavior deterioration in terms of increased accident risk.

Another major aim is to study psychological and motivational factors that influence safety awareness in high-risk jobs. Still another is to determine the impact of psychological job stress on the physical and mental health of the worker. The goals of these efforts are the development of strategies for improved accident control programs in industry and fostering occupational health practice insuring better worker adjustment to job stress.

The Behavioral and Motivational Factors Branch includes a behavioral studies laboratory that has been assembling performance test batteries for measuring reaction time, eye-hand coordination, perception, and fine and gross manual dexterity. Some of these tests will be employed to evaluate the effect of carbon monoxide on worker performance, using paid subjects from a local university. Similar behavioral tests are being given to workers who are exposed to mercury and airborne lead in their workplaces. The attempt here is to correlate exposure to a hazardous material with behavioral changes and to relate any such changes to accidents or health problems found in worker records.

The behavioral studies laboratory includes an animal test facility in which monkeys are learning certain discrimination responses, which they will be called upon to perform after beng exposed to chemical agents or drugs. Data from this study will be used by NIOSH in developing dose-response relationships for chemical agents in which the response measure is a behavioral change as opposed to pathologic effects. A small digital computer is used in the animal experiments to program the training and also is used to measure performance in testing with human subjects.

The survey research staff within this branch is directing a study to relate psychological stresses caused by the demands of a job with the physical and mental status of certain jobholders — aircraft controllers, railway dispatchers, and city policemen. Job stress features here include information overload, role conflict, and requirements for decision-making that affects the safety of others. Workers subject to such stress will be given in-depth psychological interviews, attitude and mental inventories, and in some instances physical and biological tests to uncover evidence reflecting the impact of job stress on mental and physical health.

In a safety research project, groups of construction workers who have experienced few and numerous accidents will be given tasks defining performance skills involved in their jobs and attitude inventories, and their work habits will be observed. In addition, the relationship between safety policies and company safety records will be evaluated. The aim of this study is to define differentiating characteristics of persons and companies with few *versus* many accidents. The findings may offer some ideas for worker selection to reduce accidents or eliminate practices that seem to contribute to job accidents.

The *Physical Agents Branch,* headed by Dr. Wordie Parr, has a staff of 13 — including physicists, audiologists, engineers

and technicians. This branch conducts research on the effects of various physical agents in the workplace, including noise and electromagnetic (nonionizing) radiations. The latter is composed of radiofrequency waves, x-rays, and "light," including both laser and ultraviolet wavelengths in addition to broadband visible light.

This branch has studied the requirements for a badly-needed microwave dosimeter and has contracted to have developmental work done on an ultraviolet hazard indicator.

Some of the Physical Agents Branch's work is designed to eventually remedy the absence of Federal standards for naturally radiating materials in the workplace. For example, NIOSH is seeking to establish a recommended standard to control occupational exposure to radium and its "daughters" — radiation breakdown products — and to radiation from particle accelerators and x-ray machines, for inclusion in criteria documents.

Safety in using ultraviolet devices will be increased by a NIOSH encyclopedia on the spectrum of ultraviolet lamps, now in preparation, for use in selecting replacement lamps.

The Branch's work on noise as an occupational hazard takes many forms — from supplying input to the NIOSH team that produced the criteria for a noise standard to determining if preplacement testing can identify people who have "tough ears." The hearing of 50 selected persons who have worked at least 15 years in noisy environments is being studied in an effort to find distinguishing characteristics of people who are relatively unharmed by noise.

The Physical Agents Branch is cooperating with the Bureau of Mines in a study of noise exposure and hearing loss among coal miners. In still another interagency project, the Navy is conducting hearing tests of people in industry to find out how to quantify the hazards presentd by impulsive noise, such as might result from drop forges or certain other types of machinery.

As part of an industrial noise and hearing survey program, hearing data are obtained for specific industries by two audiometric testing vans, each of which can evaluate the hearing of six persons at a time. Other services that will have special impact on industry are the forthcoming publication of a compendium of data on noise control materials available to industry and a survey of hearing conservation programs in industry, to be published soon.

CALL FOR PAPERS: INTERNATIONAL RADIATION PROTECTION CONGRESS

The International Radiation Protection Association will hold its Third International Congress in Washington, D.C., on 9-14 September, 1973. The Health Physics Society of the United States of America is the host for this meeting, which follows similar gatherings in Rome, Italy, in 1966 and Brighton, England, in 1970.

The Scientific Program Committee, under the Chairmanship of Dr. B. Lindell of Sweden, invites those prepared to present papers of interest to submit abstracts. To be considered, abstracts must contain information not previously presented or published and should be single-spaced on one side only of a single sheet of white paper. Ten copies must be submitted with the original to:

Mr. John C. Villforth, Secretary
IRPA Scientific Program Committee
Bureau of Radiological Health, FDA
5600 Fishers Lane
Rockville, Md. 20852

NIOSH, OSHA IN PERSONNEL EXCHANGE

NIOSH and the Department of Labor's Occupational Safety and Health Administration (OSHA) have participated in an exchange of top personnel, in a move intended to improve communications between the two agencies. Effective November 27, 1972, Delbert L. Flowers, Special Assistant to Assistant Secretary George C. Guenther, was assigned to serve as a Special Assistant to Dr. Raymond T. Moore, NIOSH Associate Director for Washington Operations.

Simultaneously, Vernon E. Rose, Director of NIOSH's Office of Health Surveillance and Biometrics, was detailed to OSHA. There he will have direct contact with OSHA's compliance officers and its industrial hygienists in the regions.

Though these assignments are full-time, they are also temporary. The personnel exchange will be reviewed periodically by NIOSH and OSHA leadership in order to appraise the impact and effectiveness of the exchange on agency operations.

OSHA has also assigned Robert D. Mahon, a 30-year veteran of industrial safety and health programs, as a representative to NIOSH's Cincinnati laboratories. The assignment was effective November 27, 1972. Mr. Mahon, who has extensive experience in training programs and in inspecting maritime, industrial, and construction operations and practices, recently served with OSHA's Training Institute near Chicago. There he coordinated training programs and activities for nongovernmental safety and health personnel.

Mr. Mahon's main responsibilities at NIOSH will be to carry out liaison activities, to offer his experience in helping NIOSH to establish priorities, and to assist in setting up a technical assistance program. He is currently assigned to the NIOSH Division of Technical Services in Cincinnati, Ohio, where he works closely with James Walters, Chief of the Division's Accident Prevention Service Branch.

1971 COAL REPORT AVAILABLE

The Federal Coal Mine Health and Safety Act of 1969 assigned to HEW the mission of performing coal mine health research, to make medical examinations available to miners, and to report on the program annually.

The second of these reports, *The Federal Coal Mine Health Program in* 1971, has now been published and is available as Stock No. 1716-0005 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 at a cost of $1.25 each. A limited number of copies of the report are available from the NIOSH Offices of Public Information at Rockville, Morgantown, and Cincinnati.

SYMPOSIUM ON STANDARDS FOR HOT WORK ENVIRONMENTS

NIOSH is supporting a Symposium on Proposed Standards for Occupational Exposure to Hot Environments. The Symposium, which will be held February 27-28, 1973, in Pittsburgh, Pennsylvania's William Penn Hotel, is sponsored jointly by the Industrial Health Foundation (IHF) and the University of Pittsburgh Graduate School of Public Health.

NIOSH awarded a conference grant to IHF for the Symposium following two previous successful workshops, sponsored by IHF and the University, on the subject of heat stress and hot jobs in industry.

On the first day of the Symposium the rationale and contents of the NIOSH recommended standard for hot working environments (*Criteria for a Recommended Standard . . . Occupational Exposure to Hot Environments*) will be presented and discussed. On the second day, industries that have been studying their heat stress problems will describe them to Symposium participants.

For further information about the Symposium, write to:

Heat Conference
Industrial Health Foundation
5321 Center Avenue
Pittsburgh, Pennsylvania 15232

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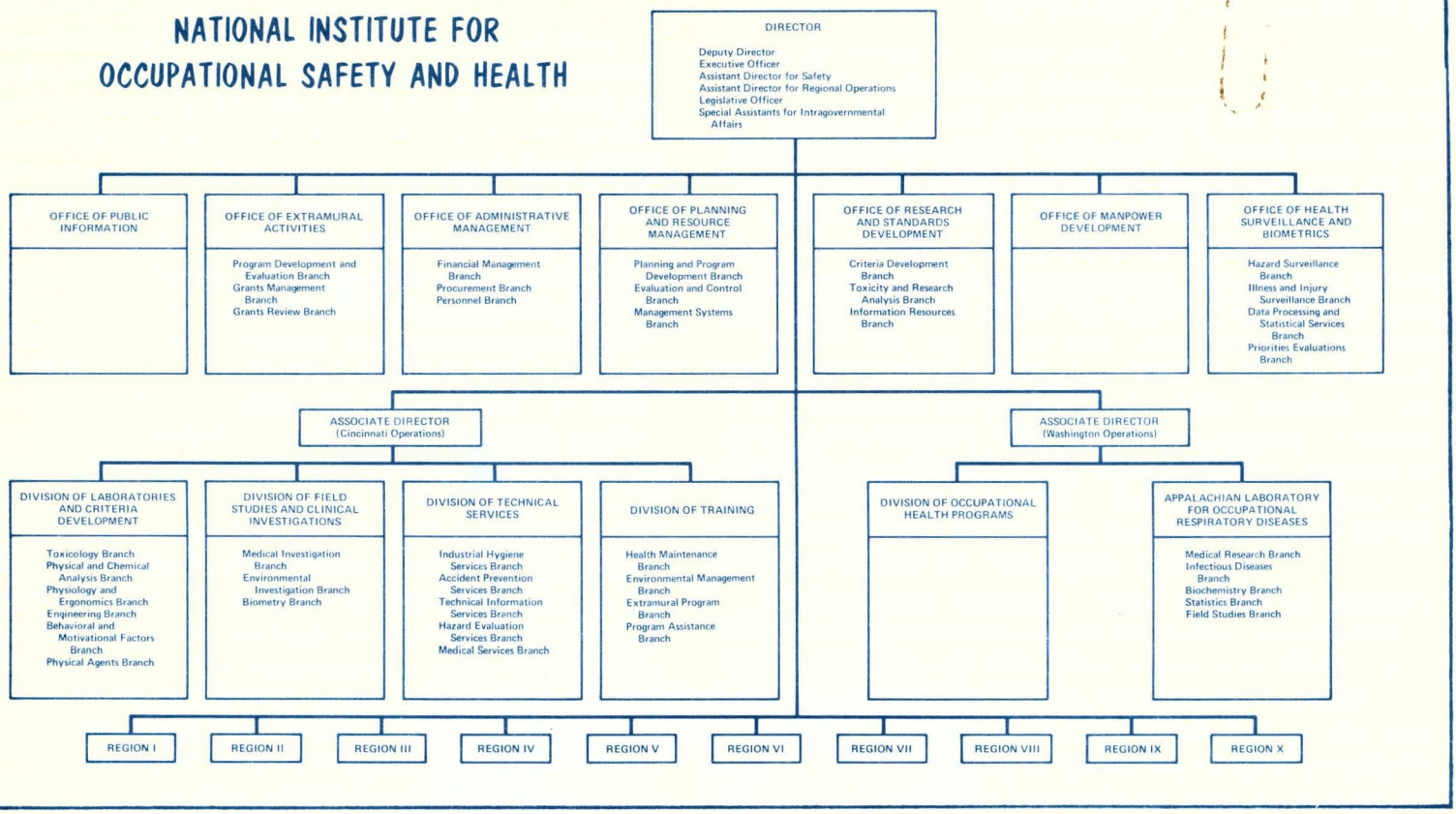

HEADQUARTERS

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APPALACHIAN LABORATORY

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WESTERN AREA LABORATORY

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Regional Program Director, NIOSH
DHEW Region VIII
19th and Stout Sts. (9017 Fed. Bldg.)
Denver, Colorado 80202

REGION IX—San Francisco
(Arizona, Calif., Hawaii and Nevada)
Regional Program Director, NIOSH
DHEW Region IX
50 Fulton Street (254 FOB)
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REGION X—Seattle
(Alaska, Idaho, Oregon and Washington)
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