A comprehensive program in asbestos hazard surveillance and education

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Though asbestos has had nearly a century of commercial industrial use, its presence and characteristics were known for hundreds of years. More recently added to the body of scientific knowledge, though, have been the pathologic effects on both workers and persons in casual contact with this valuable material. Selikoff and others have brought to light the epidemiologic base, descriptive of the family of asbestos-related diseases, the close ties to malignant change, and the role of smoking as a carcinogen.

With the acceptance of these findings, greater attention was given to the need for clinical surveillance of asbestos workers and to the development of work practices that would preclude, or minimize within the area of engineering possibility, contact of the craftsman with his work substance, so as to prevent his developing asbestosis or the later-to-come mesothelioma of the lung or other organs, or bronchiogenic or peritoneal mesothelioma.

Through the studied observations of Wilson, Sargent, and others, the awareness was heightened regarding the early, subtle changes detectable in chest roentgenograms, so that slowly, the community of radiologists and pulmonary disease specialists is becoming more knowledgeable in this particular field of diagnosis.

Rather than reviewing what has been replete in the literature concerning the clinical and epidemiologic aspects of asbestosis, this writing attempts to describe a program at a specific institution which has been designed to detect levels of specific morbidity and to educate managers and workers in all the elements of medical superintendence, the significance of the findings, and the subsequent indicated actions.

background

The United States Navy supports a number of shipyards and other facilities on the East and West Coasts and abroad for the maintenance of the vessels of its fleets. The Long Beach Naval Shipyard is the most recently established of the yards, becoming operational in 1943 to meet the needs of World War II. The mission consists of the overhaul, repair, and modification of ships of the Pacific Fleet. Each craft is assigned to the shipyard at regular intervals for reworking, as determined by its particular schedule of recycling during periods of availability. To plan for such work, which will include drydocking and outfitting, a ship-check team is sent abroad for purposes of diagnosis. On its return, plans are drawn, supplies are ordered, and manpower needs are determined so that on the arrival of the ship in port, everything will be ready. Time is of particular importance for the vessel must be turned around for deployment in the shortest period compatible with the work needs. A further function of the facility is the supervision of subcontracted repair in adjacent civilian yards.

All ships require insulation of the sources of heat and of the extensive piping systems which transport steam under pressure. It has been traditional to use asbestos for this purpose in one or more of its fabricated forms, such as pre-cut block, padding, board, flexible gaskets, and the like. With the demonstration, however, of its

The views and assertions contained in this report are the personal views of the writer and are not construed as official or as reflecting the views of the Navy Department or the Naval service at large.

serious toxic properties, substitutes have been sought, and in recent years, fibrous glass has been used in its place in nearly all of its applications. Because asbestos was used in new construction, it is still found in ships and when piping must be renewed, the surrounding and covering insulation is removed, the process of demolition being known as "rip-out." The former haphazard removal of the insulating material would produce clouds of high-asbestos-content dust in the ship's spaces, leading to inhalation of free fiber and the coating of work clothing.

Simultaneous with the coding of rigid work practices was the creation of a medical oversight program, fully in parallel with the asbestos standard promulgated by the Department of Labor, and in compliance with directives from Navy authority.

Medical care has been regionalized in the Navy, and each region is designated as a Naval Regional Medical Center (NRMC), with the administrative headquarters based at a core hospital. Personnel, equipment, supplies, etc., are provided to Branch Clinics throughout the jurisdictional area of the Region, which offer services to the particular activities where they are located. A Branch Clinic on Terminal Island furnishes preventive and therapeutic health services to the civilian and military personnel of the Long Beach Naval Shipyard.

medical surveillance

Initially, certain crafts were considered at risk, specifically the insulators and pipefitters. But as closer scrutiny of the chest radiographs of the personnel in allied trades was begun, it was realized that many more employee groups outside of these two were, or had been, exposed to asbestos as a work material. Another factor arose in the determination of groups at risk, a factor possibly unique to the obtainment and nurturing of marine craftsmen. A great number of tradesmen are trained within the shipyard through the mechanism of a four-year apprentice program. After serving as journeymen, many move up through the foremen levels, eventually to become executives. Because of this kind of occupational mobility, the top white-collar persons have had the same kind of work-substance exposure as those craftsmen currently in the shops and on waterfront and, for purposes of surveillance considered equally at risk. With the exposure-to-clinical-signs lag period, concept of risk has to be altered to inc personnel who were in contact years ago. practical purposes, certain shipyard wor other than insulators are considered at risk. is anticipated that asbestos will be encount in ships for years to come.

An interesting example of the need continuous clinical observation is that o woman now 68 years old, who was empl with asbestos padding for one year, in 1943, who recently became known to us. When rayed, her chest film showed typical bilat pleural thickening characteristic of asbest fibrosis of the parietal pleura. The dose was known, and the course of lesion developm not measurable; but 35 years later, the signs w present.

The program of clinical observation cons of the following entities:

clinical examination — pre-placement

Each new employee accepting a position as insulator or whose work involves contact w asbestos, receives a complete preplacem medical examination prior to actual w assignment, consisting of medical and occu tional histories, standard organ system funct inventories, a visual acuity evaluation thro use of the Ortho-Rater, audiometry (5 through 6,000 Hz), complete urinalysis, i chest X-ray (14" × 17"), and a screen pulmonary function evaluation consisting VC, FVC, FEV_1, FEV%, and FEF. If sugge positive findings are encountered, and a radiographic definition is not adequate diagnosis of such entities as pleural thickenin interstitial disease, additional views (right a left anterior obliques) are obtained. Med record jackets are appropriately mar "ASBESTOS WORKER," and Radiogra Report Forms are comparably imprinted w "ASBESTOS WORKER."

clinical examination — periodic

At a yearly interval, each exposed empl returns for a repeat of the evaluative proce

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...ated above. Again, to maintain a minimal ...sure to ionizing radiation, a PA film only is ...ned unless there are indications for ...onal views. If a worker demonstrates more ...nsive disease radiographically, or if it is the ...estion of the radiologist or the pulmonary ...ase consultant that he be followed because of ...ipated development of malignant change, ... interval of examination will be shortened to ... months or even less. When indicated, ...ography may be conducted. During the ...dical examination, special attention is given ... the presence of clubbing of the terminal digits, ... to symptoms arising from the respiratory, ...diovascular, or gastrointestinal systems. On ... occasion, a recheck of the patient's smoking ...story is carried out.

clinical examination — termination

At the time of separation from employment, ...ch worker exposed to asbestos has a repeat of ...e procedures outlined previously. The ...amination may be conducted as part of a ...ability retirement evaluation or may arise as ...rt of a worker's compensation disability claim. ... a terminee has moved from Long Beach, a ...ow-up letter will be sent to him with a copy of ...inal X-ray findings — if significant — so that ... may seek medical consultation where he has ...ded as a resident. He is also invited to call the ...dical Director by telephone if additional ...tails are needed. In a rare instance, ...angements have been made for the extremely ...nt retiree to have additional X-rays taken at ... adjacent Naval facility. Copies of the ...respondence or the content of the telcons are ...de part of the Out-patient Treatment Record.

clinical examinations — asbestos worker register

A special register has been maintained of all ...sonnel manifesting changes on chest ...iography indicative of asbestos-related ...ase at one stage or another. Included also are ...lators or pipefitters who may not have ...anifested asbestotic changes. This register ...vides constant information as to the status of ...yard personnel who have been or currently ...xposed to asbestos products. In addition, in ...nd segment of the register, a list is maintained of all personnel demonstrating normal chest X-rays. Further, as part of the register, the Medical Director retains copies of death certificates, insofar as he has been able to acquire them, of Shipyard employees who died from asbestosis or an asbestos-related disease, such as carcinoma of the lung. Copies of forwarded reports on selected patients from the University consultant are maintained with the register.

clinical examination — special consultation

Nearly two years ago, a special arrangement was made with the Office of Workers' Compensation Programs (OWCP), U.S. Department of Labor, in San Francisco, whereby the Medical Director at Long Beach Naval Shipyard was granted authority to refer certain asbestos workers for extensive clinical evaluation. The primary examiner selected, among others, is Professor of Medicine and Chief of the Pulmonary Disease Service, School of Medicine, University of Southern California, Los Angeles. He is an internationally recognized authority in pulmonary disease, and has one of the most outstanding laboratories in the western states. After preliminary examination, the Medical Director will refer the patient and will receive a five- or six-page detailed report of his findings, subsequent to interpretation of a clinical history, medical examination, chest radiography, and multiple pulmonary function studies. The report along with appropriate other documents will be sent to the OWCP, which will accept the report, and consider the study definitive and the statement of cause and work relationship as clinically and administratively sound.

The workers who are referred for this special kind of evaluation are those persons who are disabled, or who are considering retirement, or who have an admixture of work-generated and non-occupationally caused pulmonary findings, wherein a separation must be made of the effects of each causative agent. An example of the latter would be a patient with extensive pulmonary emphysema who shows, in addition, pleural or interstitial asbestosis.

On receipt of the report from the consultant, the patient is called into the office of the Medical Director and a full interpretation of every aspect

of the study is carried out. The employee is given a copy of the report and it is on these occasions where the worker's wife may accompany the individual. At these sessions, also, if the patient is sufficiently disabled, full explanation of the retirement options is given.

At the time of the inception of this special evaluative procedure, a clarifying meeting was held with representatives of the Metal Trades Council (MTC), and their complete support has been obtained at all times. If, in the consultant's opinion, the asbestos worker is in need of treatment, a copy of the report will be forwarded to the physician he selects for this purpose. At the time of this visit, the names of Board-certified pulmonary disease specialists close to the patient's residence are given for his choice.

To date, approximately 66 workers have been studied at the University of Southern California, and elsewhere, and appointments are pending at a rate of one per week through the next three months. The referral form used for such employees involves the completion of a history, physical examination, and report of laboratory findings. A copy of the completed referral form is maintained in the Outpatient Treatment Record. Frequent telephone conversations with the consultants are held for clarification of specific clinical findings or details needed for interpretation to the patients once seen and who are still working in the Shipyard.

clinical examination — special consultation by mail and telephone

At the request of certain asbestos workers, chest films will be forwarded to Irving J. Selikoff, M.D., Department of Community Medicine, Mount Sinai School of Medicine, New York City, who is a recognized authority on the medical effects of asbestos. These workers wish authoritative review of their films and frequently may not be satisfied with interpretations given locally. Only in a rare instance, in the past, has there been disagreement between Dr. Selikoff and the radiologist who reviewed the films. There is never any hesitancy in forwarding the films for, were this to take place, the credibility of the medical facility would be suspect of parochialism. Frequent telephone conversations are held with Dr. Selikoff in which new issues are presented for discussion and guidanc. obtained relative to problems in placem interpretation, records, and the like.

clinical examination — special survey

In June 1977, a special chest X-ray survey conducted of 500 persons who comprised a percent representative sample of the 5 persons involved in production at the I Beach Naval Shipyard. Of the numbers stud 316 were normal (63.1%), 153 (30.5 demonstrated positive findings related dire to changes secondary to the inhalation asbestos fibers, and 32 (6.4%) showed findi unrelated to asbestos but demonstrative of ot pathologic changes in the lungs or in the he such as diaphragmatic hernia, pulmon emphysema, and the like. A few subjects show combinations of pulmonary change occupational and nonoccupational in orig Correlations have been carried out of t diagnosis with the variables of age, sex, length Shipyard service, and work location. In t survey, one employee with previou undetected cancer of the lung was found, a one person demonstrated a rare bone dise currently undergoing diagnostic scrutiny. Of 18 women surveyed, two showed findi indicative of asbestos changes. As a result of survey, the Shipyard Commander directed comparable review of all other persons in Shipyard, a total of approximately 6,0 workers who had not had X-rays during 19

clinical examination — total survey

Beginning 31 October 1977, all remain personnel of the Shipyard who have not h chest X-rays completed in the calendar year h were scheduled for chest radiography, consist solely of a single PA view. If findings w questionable or were in need of great definition, additional views were obtained. the time of writing, approximatley 5,(individuals have been seen, at an average slightly more than 100 per day. This surv should be completed shortly. Correlations w be made on completion of the survey as foll positive findings as related to age, sex, w location, smoking history, and length of serv The findings from the study will be offered

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state report. The survey is characterized by unusual cooperation of the Metal Trades Council, AFL-CIO, the Shipyard, and the NRMC, Long Beach. It is only through such a continuing cooperative effort among these individual bodies that a medical surveillance program of this type can succeed.

worker education

While it is necessary to know the health status of workers at special risk, the effort becomes ineffectual if the results are maintained unilaterally. It is essential that the members of the work force under clinical study be informed of the findings and be apprised of the nature of the risk attendant upon their job assignments.

Although it is mandated by the Occupational Safety and Health Act of 1970 that employees be educated in the health aspects of their work contacts, activities in such training can be extended as to alleviate much of the anxiety manifested by those persons who fear asbestosis. Much rumor is rampant. Some workers equate parenchymal change with cancer, while others avoid chest radiography in fear of what might be discovered. To a great number, notification that pleural fibrosis is present is interpreted as equivalent to an order that they immediately must retire and move to Arizona.

It is this kind of misinformation and erroneous belief systems that must be altered, and such change can only be effected by a warm, sincere, dedicated information exchange between the clinical monitors and the monitored. The program in education takes many configurations.

worker education — individual

Certain individual asbestos workers have their examination findings reviewed by the Medical Director so that interpretation and counseling can be offered to those at particular risk of asbestogenic lung disease. At these sessions, both normal landmarks and pathologic findings, as seen in the chest films, are demonstrated to the employee, the pulmonary function findings are translated into understandable terms, and he is counseled as to his work status, e.g., remain at regular work in the Shipyard, seek modified or alternative employment, consider a special consultative examination if symptoms or length of service warrant, consider disability retirement under U.S. Civil Service Commission regulations, or consider compensable disability retirement under the U.S. Federal Employees' Compensation Act. Infrequently, an employee will bring with him his spouse, and occasionally his child, so that there will be family understanding of the interpretation of his health status. The family session is ideal, for it is our experience that the employee's wife usually asks more significant or penetrating questions than does the worker himself. On the conclusion of these sessions, the employee is given a copy of his chest film interpretation and a duplicate of the reported results of his pulmonary function evaluation.

work history

As part of the individual review with the exposed asbestos worker, a complete work history is obtained if his chest X-rays for the first time disclose findings indicative of one form or another of asbestos-related disease. It is of interest that in the past few months, the Metal Trades Council has been in the process of developing a medical history form, and several lengthy medical histories have been obtained by officers of the Council in an effort to aid their members in documenting their Shipyard work exposure.

worker education — special employee groups

In keeping with a Navy requirement, at a six-month frequency the insulators along with their foremen, attend a training program in divided groups. In sessions lasting 1-1/2 to 2 hours, either slides or a film on asbestos use are shown; updated knowledge of asbestos and asbestos diseases is offered, and questions which are submitted in advance are answered by members of a panel which may include one or more or all of the following: the Shop Superintendent, the General Foreman, the Safety Director, the Industrial Hygienist, and the Medical Director. A question-and-answer period allows interchange of information. Of significance to these workers is not only the potential hazard of asbestos, but also the potential toxicity of

adhesives and other materials used in lagging. The content is varied from a review of the disease potential, to X-ray findings, to a description of sample collection and fiber counting, to a history of the use of asbestos, to a review of the total surveillance program. An effort has been made to vary the content of each presentation so as to maintain interest for both old and new shop members. At a recent session, the workers were given a complete demonstration of the variety of X-ray findings. Further, the Industrial Hygienist explained the procedures involved in sample collection and fiber counting. The Safety Department representative reviewed the Shipyard's new Asbestos Control Manual which calls for stringent work practices regarding the removal of asbestos. At the same session, the results of the special chest survey were delineated.

Because of the increasing number of positive X-rays returned on Shipyard personnel, a system has been instituted, in keeping with the meetings with employee groups, on coding of the significant findings. Those employees with comparable levels of findings are met with in groups of approximately 40-60 persons for a presentation of the X-rays and other findings applicable to that group. Each worker attending is given a copy of his report, the terms encountered are defined for his and his physician's use, and he is given printed material on asbestos. The sessions provide opportunity for questions and answers relative to asbestos and the clinical conditions resulting from working with that material. This format will continue to be used in the future for the relaying of information and for the opportunity of the workers to meet directly with the Medical Director. During the survey of the entire shipyard, these meetings have been held weekly.

worker education — executive management

Periodically, the Medical Director appears before one of the daily meetings of the Group and Shop Superintendents, the top civilian executive group of the Shipyard. In addition, several of the military heads are in attendance. In these meetings, the problem of asbestos is discussed and at one session, examples of all of the pertinent chest X-ray findings demonstrated to the group. The var... pathologic changes was presented, and particular meeting led to a voluntary req... chest films by about 50 percent ... superintendents; eventually all ... superintendents participated. At the weekly meeting conducted by the Shipyard Com... er, information is provided relating to medical surveillance of asbestos workers s... both civilian and military managerial pers... can be kept current as to the significance of studies.

worker education — first-line supervis...

In the past 3-1/2 years, subsequent to initiation of the new shipyard effort occupational health, the Medical Director been regularly scheduled for inclusion in supervisors' training program, a week-long hour-a-day series of sessions held for fore... and general foremen. Included in ... presentation is information about asbes... findings of clinical surveillance, the need managerial enforcement of protective meas... and emphasis on the importance of ... supervisor's knowledge in disease preven... These presentations led to some 60 percen... each group attending (average number ... session is 25) requesting voluntary current c... radiography, prior to the survey. ... supervisors are intensely interested in ... material because most of them, as indic... previously, have had long periods of servic... this, or other, shipyards.

worker education — new employe... orientation

Within the past few months, an orienta... program for new employees — those indivi... hired during the previous 30 days — has ... instituted and both occupational health nu... and industrial hygiene representatives m... presentations to the group. The significance... medical surveillance is emphasized, as is the ... for continuing chest radiography during ... period of employment. Questions presented ... the new employees are responded to so that ... much clarification of an issue can be offered ... possible.

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...er that all occupational safety and health ...nnel in the Region be familiarized with the ...al surveillance program, a review of the ...stos and asbestos-related disease situation ...ered by the Medical Director at each ...thly Occupational Safety and Health ...ng. These meetings, held at different ...ations within the region, are attended by ...cians, nurses, industrial hygienists, safety ...ectors, union representatives, and ...ppressive personnel from both civilian and ...tary components. After the mid-morning ...eak, which follows a special guest speaker, ... material, or the progress being made with ...ain aspects of the surveillance program, is ...ented to the group. For example, just ...ently, the writer was apprised of the death of a ...mer asbestos worker from the Long Beach Naval Shipyard, who at the time of death, had ... cause of death recorded as congestive heart ...ure. Autopsy showed carcinoma of the lung ...th metastases to bone, the liver, and all nodes. ... lungs were complete with asbestos bodies, ...pleura was remarkably thickened, and tumor ... present at the site of that thickening. These ...ings were reviewed at a subsequent meeting ...a procedure typical of the method of updating ...sonnel as to the asbestos situation.

Monthly staff meetings are held for Branch ...ce personnel, and professional staff meetings ... held with the same periodicity. At each of ...se meetings, personnel are informed of events ...the asbestos surveillance program. At a recent ...thly meeting, a presentation was made ...scriptive of the asbestos removal project at a ...ore facility of the Navy. The planning and the ...cautions used were extraordinarily in parallel ...n the measures used aboard ship in the ...removal of insulation.

...interdepartmental communication

...ring 1975, an Occupational Health Advisory ...mittee was appointed at the Long Beach ...al Shipyard. the Committee members ...esent the Enployee Relations Division of the ...strial Relations Office, Safety Office, ...ary personnel, management, and employee ... At the monthly meetings of this ...ittee, the representatives are informed of the progress being made in medical surveillance, in patient progress (anonymously), and with any new surveillance activity relating to this type of work exposure. Trade union representatives convey the gist of these reports to their constituents, and by means of minutes, the Shipyard Commander and others are kept apprised of developments.

extramural communication

The Medical Director remains in touch with personnel involved in special studies, such as those conducted at the other Naval shipyards, gaining information either through the Medical Directors or representatives of the trade unions. Representative samples of workers have been studied at other activities and the Medical Director attempts to remain current in his knowledge of the results of such studies. For example, data are on hand of a recent study at a west coast shipyard and at a northeast facility in the private sector, which will serve as a good basis for comparison with the results of the total Long Beach study.

environmental surveillance

Industrial hygiene control measures are executed at the Long Beach Naval Shipyard in the form of environmental measurements, consisting of sample collection and fiber counting of such samples. The method of measurement consists of the use of a membrane filter, 400 to 450 magnification, with phase contrast illumination, and with the sample mounted in a high viscosity solution of the membrane filter material. Sampling is undertaken in those work compartments aboard ship where rip-out is being undergone. Records of such monitoring are maintained in the Industrial Hygiene Laboratory and in the office of the Medical Director. Hundreds of such reports are of file, dating from late 1975. Measurements are made on request from management, the Metal Trades Council or, in some instances, from individual workers. The reports of findings are forwarded to the originator of the request, the Metal Trades Council or other employee groups if indicated, the Safety Office, the NRMC, Long Beach, and to other managerial personnel who should be

apprised of the findings; recommendations are made for control measures when necessary. The Industrial hygienist and Industrial hygiene Chemist have sought knowledge of compliance with recommendations, and notes regarding compliance or noncompliance are entered into subsequent inspection reports when the environmental caseload permits re-investigation.

During the past few weeks through the cooperation of the Production Officer, personnel from one of the shops have been trained to collect air samples for fiber counting in the Industrial Hygiene Laboratory. In addition, certain of the group have been trained in actual counting itself. Through this kind of paraprofessional extension, more samples will be obtained which will permit greater compliance with environmental testing requirements. This personnel will continue to be trained by the Industrial Hygienist and the monitoring which they will conduct will be under the supervision of the Hygienist.

manual on policies and procedures

The Manual for the Branch Clinic, which has been prepared in part, will include procedures relative to the entire asbestos surveillance program. The details of the examination process will be entered, and all of the administrative steps will be described.

participation in control program

The Director and other members of the Branch Clinic staff participate in control programs with Production and Safety personnel. Recommendations have been made regarding respiratory protection, wet-process sanding and cutting, laundry of work clothing, substitution of alternative safe materials, and posting of caution signs. The issue of environmental pay has been left entirely to the Industrial Relations Office, as this is a matter of negotiation, and not scientific rationalization. When opinions are sought regarding any aspect of asbestos toxicity, the issue is reviewed with the Department seeking aid.

literature file

Annotated files of the professional literat:- asbestos are maintained and currently nu- many hundreds of articles relating to the cl- industrial hygiene, analytic, epidemi- engineering control, and personal hy- aspects of work with free asbestos f- Included in the collection are those textbooks devoted to the subject of fibro- lung disease. Nearly all of the public- emanating from H.M. Dockyards are at h-

the future

extension to the fleet

A meeting has been held with the med department representatives from the s- currently in port at which a presentation - made on asbestos and asbestos-related dise- This kind of session represents an orienta- program of fleet personnel to the environme- and medical surveillance needs in work w asbestos.

research projects

Plans are being made currently for t preparation of a research protocol for a m- year research project to be carried out at t Long Beach Naval Shipyard with both Navy - extramural funding. Efforts will be made define the problem in light of all t epidemiologic variables, and an extens- program in worker education will be develop- executed, and evaluated. Special audio-vi- aids will be made so that the education prog- will be extended to employees in crafts o- than that of insulator. The aids will be upda- as indicated, and at the present time var- organizations are being solicited for materia- be used in this aspect of the program. Furt- plans are being made for the utilization of c- processing in the establishment of a call-in fi- roster of employees by asbestosis status, and maintenance of records relating to both recen- retired and present employees. Co- appropriate to this project are in preparatio-

discussion

A program of this dimension attains seve- objectives. It provides display of the he- status of the asbestos workers at risk, it br-

...formation, personal and general, to ...s singularly involved, and through it ...pts to limit as much as possible the ...each has been developed by injudicious ...al press statements. The truth is ...s stirring of the emotions without the ...of inflammatory editorial comments.

...provision of all available information to ...olved employee is an apprehension-...ing act in itself, for he is assured that no ...material re his health is held back. His ...s are open to him, and he is free to take ...ports to his own physician.

Surveillance, education, and conjoint medical-management-labor efforts in disease control can spell the eventual ridding of a potentially disabling occupational disease.

summary

The surveillance program of asbestos workers at the Long Beach Naval Shipyard consists of a variety of clinical examinations and consultations; educational efforts targeted toward individual patients and groups; environmental measurement; maintenance of pertinent monographic and periodic literature; and records and report maintenance.

Accepted July 24, 1978

new industrial hygiene consultant's specialty codes added . . .

...use of a growing demand, two new ...alty code designations will be available ...o June, 1979 and future published ...s of industrial hygiene consultants.

Industrial hygiene chemistry, coded 5A, ...respiratory protection, coded 10A, are ...new specialties. The "A" designations ...been assigned to avoid disturbing long ...shed relationships of present code ...ers to particular specialties.

...se presently listed as consultants who ...to add either or both new specialty ...s to their present listings should write to ...editor, American Industrial Hygiene ...ation JOURNAL, 475 Wolf Ledges ... Akron, OH 44311 NO LATER THAN ...RIL 1, 1979, the deadline for additions or ...es in the listings to be published in the ... 1979 issue. New listings MUST be ...ved by the same date.

Billing for June and December, 1979 listings will be mailed in January, 1979. In fairness to individuals placing listings up to five lines deep, carrying name, street address, city/state/zip, phone number and one line of code designations, billing will be based on the five-line basic standard. Deeper listings (six or more lines) will be billed for the five-line base charge, plus 20% additional for each added line. Billing for a nine-line listing will be the base charge X 180%. Payment MUST BE RECEIVED by the April 1 deadline to assure June publication.

All additions, changes or new listing requests MUST be in writing. Telephone instructions CANNOT be accepted.

Only national or organizational members of AIHA, in good standing, are eligible to be listed as consultants in the JOURNAL's semi-annual (June and December) listings.