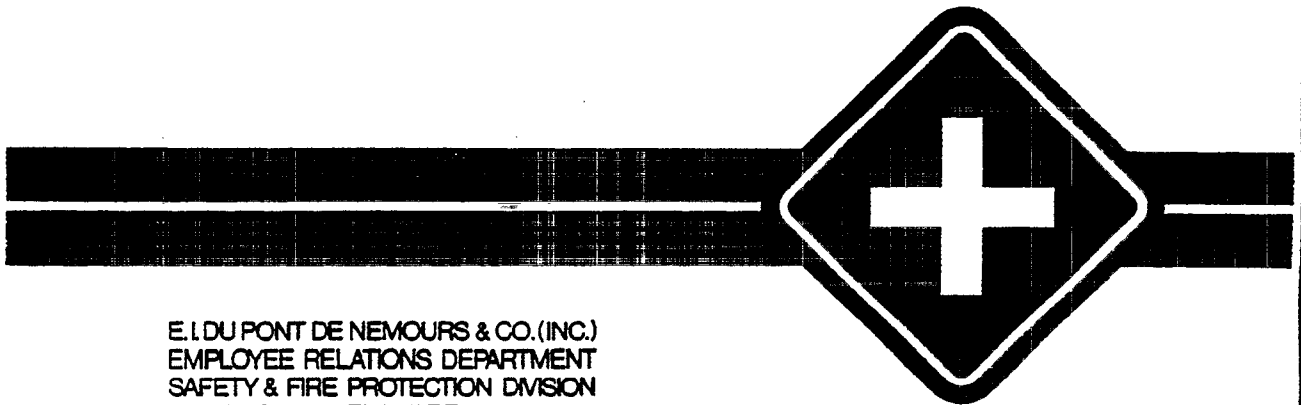


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Occupational Health Survey

BEAUMONT WORKS
POLYMER PRODUCTS DEPARTMENT
HOUSTON, TEXAS

REPORT NO. 1022-H
MAY 1, 1981



E. I. DU PONT DE NEMOURS & CO. (INC.)
EMPLOYEE RELATIONS DEPARTMENT
SAFETY & FIRE PROTECTION DIVISION
WILMINGTON, DELAWARE 19888

DUP 0502715

DU 002264

SUMMARY

The overall rating was Good.

Organization for administration of OH programs, housekeeping and facility maintenance and radiation control are excellent.

Scope of information on carcinogenic and embryotoxic materials should be included in documentation of annual training.

Appropriate maintenance, cleaning and laboratory chemicals should be included in the collection of MSDS's or similar documentation.

The respirator program is good. It is recommended that employees who are now required to use half-mask respirators for which they have not been fit-tested be fit-tested as soon as possible. The need for a full-face escape mask for ammonia fumes should be evaluated and the breathing air systems should be brought into compliance with Engineering Standard S 1 H.

Selection of gloves is fair. Permeation data should be considered with other significant factors in choosing the most appropriate glove, with special attention given to carcinogenic materials.

The air monitoring program is excellent. Plant personnel should be trained on procedures to handle asbestos. Labeling of asbestos-free insulation should be considered.

Welders should be trained to place the exhaust hood so the required airflow can be maintained.

Spill procedures are fair and need to be upgraded.

Consumption of food or beverages should not be allowed in a laboratory where carcinogens are handled.

Plans to mark hearing protection zones at 87 dBA for 12-hour shifts are endorsed.

DUP 0502716

DU 002265

GENERAL

The third occupational health survey of the Beaumont Works was conducted by the undersigned engineers April 6-10, 1981. Escorts during the visit included members of area supervision and the occupational health coordinator.

The purpose of the survey was to evaluate occupational health programs and practices and to provide suggestions for improvements as needed. Practices, procedures and facilities for identifying, evaluating and controlling environmental factors that may cause illness, impaired health and significant discomfort to employees were addressed. The Beaumont Works was rated Good on a scale of Excellent, Good, Fair and Poor, with the first three being degrees of satisfactory performance.

This report summarizes the observations and recommendations presented to the manager and staff at the conclusion of the survey. Details and many of the specific recommendations developed during the survey are not included since these were discussed in field observations.

We would appreciate being advised within the next few months concerning the actions taken on recommendations in this report and your response to any of the field observations with which you disagree.

SAFETY AND FIRE PROTECTION DIVISION

N. D. Johnson
N. D. Johnson, Occupational Health Engineer

R. Schmidt
R. Schmidt, Occupational Health Engineer

J. R. Martin / nos
J. R. Martin, Consultant Supervisor, Occupational Health

NDJ/RS/msh

DUP 0502717

DU 002266

ORGANIZATION AND ADMINISTRATION

Program Administration

The organization for administration of occupational health programs is excellent. The Environmental Health Committee of the Central Safety Committee is composed of representatives of each plant group and the plant industrial hygienist. Routine meetings are held monthly and the minutes are issued to members of the Central Safety Committee.

Occupational health staff personnel are very knowledgeable in their areas of expertise. Extensive use has been made of ESD training courses. The plant OH coordinator is a certified industrial hygienist and the OH coordinator of the petrochemicals operation has successfully passed the first phase of certification.

Communications

Communication of occupational health information is good. Employees are trained annually on the health hazards in their areas and new employees are trained as they enter the area. This training is documented with the names of the employees and the dates of the training. It is recommended that the scope of the information on chemicals with carcinogenic or embryotoxic potential be included in the documentation. The maintenance organization has begun work on a program intended to eliminate deficiencies in their training programs for occupational health. Additional personnel have been committed to the task and completion is scheduled for this year. This program is commended.

Although plant policy was changed in late 1980 to eliminate disposable dust masks in favor of the Comfo II respirator, several members of supervision indicated that the disposable masks would be used for dusty operations and asbestos work. Some employees were noted with the disposable style of mask in their possession. It is recommended that significant communications of this type be highlighted to assure understanding and compliance.

Chemical Hazard Information

This area is good. Significant progress has been made in the description of raw, intermediate and finished production materials in the four page Material Safety Data Sheet (MSDS) format.

Support materials and catalysts are also included in the collection. It is recommended that maintenance chemicals, industrial cleaning agents and appropriate laboratory chemicals (as described during the survey) be included in the collection of MSDS's.

The Hypalon® Area prepared training sheets on carbon tetrachloride and chloroform for employee use, which omitted information on the carcinogenic potential of these chemicals. It is recommended that the description of the carcinogenic potential be included in employee training material.

Personal Environment Record System (PERS)

The site is currently entering work history data for all production operators and maintenance mechanics. First line supervisions' work history is also being entered. Exposure histories will be entered during the second quarter of 1981.

Medical Involvement

The site is currently without a full-time physician and is using a contract physician. The previous physician had toured the plant areas, but due to his ill health the frequency had declined significantly during the past year. The nurses are able to respond to plant areas during ambulance runs but have limited knowledge of plant areas. When a new physician is hired he should be involved in the occupational programs, as appropriate, and should make periodic tours of the plant areas to become familiar with employee working conditions. The nurses should also tour periodically, with or without the physician. Sanitary conditions of lunchrooms, restrooms and change rooms should be checked by the medical staff.

Contractor Operations

Contractor operations as they relate to occupational health are adequate. Programs and procedures are in place to protect contractor employees from Du Pont created hazards and vice versa. Few contractor operations were going on during the survey.

PROTECTIVE EQUIPMENT

Respirators

The respiratory protection program is good. The quantitative fit-testing equipment and program are excellent. However, there are some aspects of the program that need improvement.

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• Disposable Masks. While previous plant policy allowed the use of the 3M 8710 for dust, two other types of masks (not site approved) were brought onto the site, a mercury vapor mask and a 3M 9920 mask used by a welder. It is recommended that the disposable masks be purged from the site and not readmitted unless a fit test is provided.

• Half-face Masks. When the disposable masks were removed from use, half-face Comfo II's were issued for use in those applications. Some employees have not been fit-tested or retested within the last year for these respirators. It is recommended that fit testing be scheduled as soon as possible for all persons required to wear respirators who have not previously been tested.

The Methanol Area has placed several half-face masks with ammonia cartridges in the reformer building. These are for escape in the event of an ammonia leak from the Ammonia Area. Since ammonia is an eye irritant it is recommended that the need for a full face respirator be evaluated.

• Air Line Respirator. The site installs tees (Hansen Couplings) on its air line respirators for attaching escape cylinders when necessary. This arrangement is convenient and probably does not affect the degree of protection provided but, technically, it appears to void the NIOSH approval. Although one OSHA compliance officer who saw the arrangement considered it acceptable, other OSHA personnel may not. It is recommended that this practice be discussed with the departmental Energy and Environmental Affairs office who may want to ask for legal input.

The breathing air systems should be modified to include the filter recommended in Engineering Standard S 1 H. A sign should also be provided to have the pressure adjusted correctly and blow down the air line prior to use.

• Self-Contained Breathing Apparatus. There was confusion between area personnel and the safety department on their respective responsibilities for inspecting and maintaining the self-contained breathing apparatus on the plant. It is recommended that training be provided to appropriate area personnel in the proper inspection and maintenance of the equipment.

Gloves

The selection of gloves to protect personnel from contact with hazardous chemicals is fair. Permeation rates have been considered along with other factors in selecting gloves for handling TEL and AN. However, the site uses a number of other chemicals, some with carcinogenic potential, for which skin absorption may be a significant route of exposure, e.g., carbon tetrachloride and perchloroethylene. It is recommended that permeation data such as that developed at Haskell Laboratory be considered along with other significant factors in choosing the most appropriate glove for all hazardous chemicals which may affect the skin or may be absorbed through the skin. For the compounds with carcinogenic potential impermeable gloves should be used as dictated by the nature of the operation.

EXPOSURE HAZARDS - IDENTIFICATION, EVALUATION AND CONTROL

Chemicals

The plant is commended for its excellent air monitoring program. Evaluation and verification of sampling and analytical methods is done by very knowledgeable plant personnel. The areas follow up where high exposure is evaluated. Basis for the evaluation is the LOGAN program as outlined in Engineering Standard S 12 T.

The sampling priorities are established on basis of Engineering Standard S 11 T by knowledgeable personnel but the priority determination has not been documented. It is recommended that the evaluation be documented to facilitate review whenever a change occurs which is likely to affect employee exposure.

Although asbestos is handled infrequently by plant personnel, field observations showed some inconsistency in the knowledge about who handles asbestos and what protective equipment is required. It is recommended that all involved parties be informed on the content of the plant's asbestos procedure and the involvement of Du Pont employees in handling asbestos. It is recommended that new insulation be identified as asbestos-free. In case of future removal, unnecessary and time-consuming precautionary measures can be avoided.

Ventilation

The ventilation program is good.

Plans to install new laboratory hoods in the Polymer Products (PP) Laboratory (project costs \$700,000) are endorsed. In the meantime, the maximum opening whereby the minimum required airflow can be obtained should be marked. The sashes should not be opened further when chemicals are handled in the hoods.

All local exhaust hoods for chemical control should be monitored for airflow annually, e.g., the hood over the rubber mill in the PP Laboratory was not checked.

Plans to replace the canopy hood in the water treatment laboratory of the Methanol Area are endorsed. The hood should be designed so fumes are drawn away from the operator and not through the breathing zone.

Three observations indicated that welders are not aware that the required airflow of 100 fpm in the welding zone has to be maintained. It should be considered to post the distance, within which the required airflow can be maintained. It gives the welder a practical reminder of how close he should place the exhaust opening.

Emergency Procedures

Spill procedures are fair and should be upgraded. Advice for protection in case of a spill is partially covered in different documents, e.g., MSDS's, emergency procedures primarily for environmental control and standard operation procedures. It is recommended that concise, readily accessible procedures be developed to protect people, environment and property. Based on the property of a chemical or a group of chemicals, definitions of major/minor spills should be established. The protective equipment, type of glove, respirator, acid suit, etc. should be selected and defined. The cleanup procedure and proper disposal should be covered. The requirements for reentry, e.g., air monitoring results should be specified. Drills are helpful training tools in implementing these procedures.

Housekeeping and Facility Maintenance

This program is excellent. Leaks are generally contained and areas roped off.

Food Control

Food control is good. The interiors of microwave ovens need better cleaning. Thermometers are recommended for all refrigerators to assure that temperatures are kept at or below 45° F.

It is recommended that the consumption of food or beverage not be allowed in a laboratory where chemicals with carcinogenic potential are handled, e.g., as now practiced in the PP Laboratory.

Noise Control

The noise control program is good. Annual noise surveys are performed and boundaries for hearing protection are drawn at 90 dBA. Since employees work 12-hour shifts, it is planned to mark hearing protection zones at 87 dBA within 1981. This plan is endorsed.

Where noise exceeds permissible limits, compliance plans have been developed. It is recommended that the rationale for the decision to initiate or delay engineering controls be added. Success or failure of engineering controls should also be recorded.

Radiation/Laser

These programs are excellent. Source monitoring is in compliance with the appropriate standards.

Heat Stress

Several jobs have been evaluated for heat stress potential. Work/rest cycles have been established for some tasks. It is recommended that evaluation of current and future data be continued as planned to establish work/rest cycles where necessary.

PREVIOUS REPORT

The following items of the previous survey have not been adequately addressed:

- Improvement in documenting information to employees who handle carcinogens
- Material Safety Data Sheets for certain laboratory chemicals
- Glove selection based on permeation data
- Noise boundary at 87 dBA for 12-hour shift (Nordel® Area).

* * * * *

July 20, 1979

TO: H. L. DEY, PONTCHARTRAIN
W. E. EGAN, LOUISVILLE
H. JUNGK, CHAMBERS WORKS
G. E. BROOKE, BEAUMONT
L. L. BRUMFIELD, BEAUMONT
R. B. BURNS, BEAUMONT
R. G. CLEM, BEAUMONT
W. E. CROCKETT, BEAUMONT
M. F. DE CARLO, BEAUMONT
N. J. DERRICK, BEAUMONT
L. D. DOOLEN, BEAUMONT
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G. T. WILLIAMS, BEAUMONT

FROM: L. T. FREELAND, BEAUMONT

S&F OCCUPATIONAL HEALTH SURVEY

Attached is your copy of the recommendations. Please review and be prepared to discuss any that apply to your operations.

Thanks for your cooperation during the survey.

LTF/fb
Attachment

DUP 0502724

DU 002273

SAFETY & FIRE PROTECTION DIVISION

OCCUPATIONAL HEALTH SURVEY REPORT

BEAUMONT WORKS
ELASTOMER CHEMICALS DEPARTMENT
BEAUMONT, TEXAS

REPORT NO. 9055-H
July 12, 1979

EMPLOYEE RELATIONS DEPARTMENT

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE 19898

DUP 0502725

DU 002274

SUMMARY

Overall rating is good.

Organization is excellent. Improved audit program is recommended.

Chemical catalog is fair; plans are excellent and include a new four-page format.

Physical examination program scope exceeds corporate recommendations and should be reexamined.

Respirator program is excellent. *Good Job Guys! dcr*

Use of eye wash stations needs attention.

Full shift personnel chemical exposure samples are needed in Hydan®. Some other areas need additional samples for some carcinogens.

Annual testing of ventilation exhaust systems is generally needed.

Noise control program is good; reevaluation of 12-hour shift exposures is needed.

Improved recordkeeping is needed for radiation exposure control. Film dosimeter use is urged.

DUP 0502726

DU 002275

GENERAL

The second occupational health survey of the Beaumont Works was conducted by the undersigned engineer June 17-29, 1979. Escorts during the visit included area supervision and the Environmental Health Coordinators.

The purpose of the survey was to evaluate occupational health programs and practices and provide suggestions for improvement, if needed. Practices, procedures and facilities for identifying, evaluating, and controlling environmental factors that may cause illness, impaired health, and significant discomfort to employees were addressed. The Beaumont Works was rated good on a scale of excellent, good, fair and poor, with the first three being degrees of satisfactory performance.

This report summarizes the observations and recommendations presented to the Manager and staff at the conclusion of the survey. Details and many of the specific recommendations developed during the survey are not included since these were discussed in field notes provided for the Site.

We would appreciate being advised within the next few months concerning the actions taken on recommendations in this report and your response to any of the field notes with which you disagree.

SAFETY AND FIRE PROTECTION DIVISION

Richard C. Cooley, Jr.
R. C. Cooley, Occupational Health Engineer

J. R. Martin (by RCC)
J. R. Martin, Occupational Health Consultant

RCC/dla

DUP 0502727

DU 002276

ORGANIZATION AND ADMINISTRATION

Organization

The organization for occupational health is excellent. An Environmental Health group has been formed and Environmental Health Coordinators serve for each tenant Department, as well as an overall program coordinator for the Site. An Environmental Health Subcommittee of the Central Safety and Health Committee is active and addresses occupational health topics in depth.

Occupational health program auditing in each area needs strengthening to eliminate program weaknesses reflected in survey field notes. Audits should occasionally include the Departmental Environmental Health Coordinators to further expand the expertise of the audit teams.

Communications

The communications program is good. Management issues timely information on hazardous chemicals to supervision for informing and training affected employees. A good flow of occupational health information to the Site from Departmental sources is reported and employees were found generally knowledgeable. The 1979 safety program contains several occupational health related topics to expand employee awareness. The availability of videotape equipment provides an excellent vehicle for furthering the education of personnel. Its expanded use for occupational health subjects is recommended.

Improvements in documenting information to employees who handle carcinogens is urged. Although the scope of information on carcinogens is well documented, little documentation exists to show which employees were informed and when (except for the Acrylonitrile Area where documentation required by the OSHA Standard is complete). It is recommended that documentation of discussions with employees who handle any carcinogen show the scope of the presentations, the employees informed and dates.

Chemical Catalog

The employee chemical information system is rated fair; however, plans for improvement are excellent. Information on about 200 chemical hazard summary sheets is recognized as inadequate and will be expanded and transferred to a new four-page format (a modified version of that currently in Engineering Standard S 11 T).

Distribution of the new format will be made to all user areas. Hazardous trade name chemicals and toxic laboratory chemicals, not now summarized, will be included. These efforts are endorsed as a significant improvement over current chemical hazard summaries.

A chemical purchase approval system for introducing new chemicals onto the Site is active but can be improved. It is recommended that formal approval by the Environmental Health Coordinator be required before an area orders a new chemical for use.

Medical

The medical program is excellent. Medical surveillance has been implemented where required by OSHA standards. A board-certified radiologist interprets all X-rays associated with routine physical examinations, as well as those reviewed as part of the asbestos standard. However, the scope of the periodic physical examinations go beyond recommendations in the Physician's Guidelines or that required by government regulations. For example, blood chemistry work includes an SMA-21; only an SMA-12 is recommended. EKG's are given annually beginning at age 40, instead of annually beginning at age 50. (Other examples were addressed in the field notes.) It is recommended that the advisability of continuing this expanded scope of routine physical examinations be discussed with the corporate Medical Director.

Personnel Environmental Records System (PERS)

During 1979, the Company plans to issue guidance to each department regarding a computer-based program to relate employee work assignments to chemical exposures in the work place. The Site should remain alert to the issue of the program and implement its provisions based on Departmental and Company guidance.

Contractor Operations

Contractor handling is generally good. Employees are knowledgeable concerning protecting both Du Pont employees and contractors when contractors work on the Site. The survey indicated that additional attention is needed to insure proper use of hearing protection devices by contractors in Du Pont-generated high noise areas, particularly in the Powerhouse.

PROTECTIVE EQUIPMENT

Respirators

The respirator program is excellent; an almost complete overhaul has

been accomplished since the 1977 occupational health survey. The program, which includes quantitative fit testing, represents a large expenditure of funds and manpower. Additional efforts are needed, however, to remove unapproved respirators and canisters from area storage cabinets and Stores. Also, personnel responsible for community use respirators in the Shops should become more familiar with storage, handling and cleaning policies.

Eyewash Stations

The eyewash station program is fair with improvements needed as follows:

- Continuous flow stations, tested daily, should not be approved for use unless both water streams have equal, strong flow and the streams converge.
- Retraining of employees, including supervision, is recommended regarding the minimum acceptable flush time after chemicals are splashed into the eyes. Most employees questioned were unsure, even where proper instructions were posted in the immediate area.
- Bottle eye flush stations should be maintained full of flush solution. Many were noted which needed refilling.

Gloves

The glove use program is satisfactory. However, except for the Acrylonitrile Area, gloves have not been selected based on permeation data. Plans to review glove selection and base it on available permeation data are endorsed.

Additional efforts are needed to remove asbestos gloves, no longer approved for Site use, from locations such as the Powerhouse and hot suit storage cabinets in the Shops.

EXPOSURE HAZARDS - IDENTIFICATION, EVALUATION AND CONTROL

Chemical Exposures

The chemical exposure monitoring program is excellent. Approved analytical methods are used and a manifold system is being developed to further verify the accuracy of sampling and analytical techniques. The Site embraces the sampling strategies and techniques of Engineering Standard S 11 T, S 12 T and S 13 T. Where appropriate,

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the LOGAN method of statistical analysis of data is used.

Eight-hour TWA personnel samples are recommended to more accurately quantify personnel exposures to HCN, acrolein, and methyl mercaptan in the Hydan Area. Only detector tube and fixed area monitoring has been previously done. In addition, process areas should review their resample frequency for airborne chemicals, particularly for carcinogens, to insure S 12 T guidelines are met. More frequent sampling for hydrazine in the Methanol Area and EDB in the TEL Area is needed.

Field notes addressed several other possible process exposures which should be investigated.

The use of silver solder containing cadmium should be eliminated, if possible, in favor of cadmium-free silver solder, to protect against highly toxic airborne fumes. Where it cannot be eliminated, ventilation or respiratory protection should be provided.

Where gasoline-powered industrial trucks are used in close quarters, the carbon monoxide buildup should be checked periodically.

Only small quantities of asbestos are handled by Site employees; major removal work is handled by contractors. Involved Du Pont employees are included in implementation of the asbestos standard which the Site is following.

The use of local ventilation to control potential employee exposures at chemical handling stations is good. Additional exhausted sampling boxes are planned for the Acrylonitrile Area and about \$500M will be spent by the Elastomers Laboratory to upgrade the air supply system as well as hood exhaust efficiency for handling carcinogens. However, other improvements in the program are recommended:

- Hoods, such as those in the Elastomers Laboratory, should be posted to show the date and results of the exhaust efficiency test.
- Exhaust systems installed to control chemical exposures to personnel, such as the welding fume exhausters in the Shops and sample station enclosures in process areas, should have their collection efficiencies verified at least annually to insure an acceptable level of protection for personnel.

DUP 0502731

- The accuracy of air velocity measuring devices should be verified annually, e.g., by using the technique described to escort personnel.

Field notes addressed several specific examples where improved ventilation controls are recommended.

Spill Control Procedures

Site-wide fume release/spill control procedures are good. However, unnecessary vehicular and pedestrian traffic was noted immediately following the hexane release in the Nordel® Area on June 28, 1979. In addition, the incorrect incident location signal was sounded. Eliminating recurrence of these problems would strengthen incident control and further protect personnel from exposures.

Housekeeping and Facility Maintenance

Housekeeping and facility maintenance, as it might affect the occupational health of employees, is satisfactory. However, additional attention is needed to keep lunchroom areas across the Site clean and sanitary, particularly freezer compartments of refrigerators. Equipment, not related to food consumption, such as laboratory beakers and containers, should not be allowed in eating areas.

Noise

The noise exposure control program is good. Annual noise surveys are conducted and semiannual updates are prepared of noise abatement plans. Hearing protection is required for all personnel entering a workplace noise level of 90 dBA and above, regardless of work time. Some program improvements are needed, however:

- Hearing protection requirements and boundary identification are based on a noise level of 90 dBA, even where twelve-hour shift employees are involved, such as in the Nordel® Area. It is recommended that twelve-hour shift work locations be reassessed using 87 dBA as the criteria for administrative controls, or hearing protection and noise boundary identification.
- Ultrasonic devices, such as those in the Laboratory and Medical Division, should be included in the annual noise survey program to spot deteriorating exposure conditions.

- Noisy portable tools and stationary shop equipment should be identified (by labeling or posting) to remind users of the need for hearing protection or use of administrative controls.
- Both yellow and white floor stripes are used to denote the boundary of some high noise areas. It is recommended that a consistent color code be used throughout the Site to avoid possible employee confusion.

Radiation

The radiation exposure control program is good. A trained Radiation Protection Officer is available and basic program requirements are receiving attention. The following improvements are recommended:

- The use of direct-reading pocket dosimeters as the primary means of recording exposure should be phased out in favor of film badge dosimetry. The direct-reading dosimeters could be used, if desired, as a supplement to film badge dosimetry. Improved accuracy and legally strengthened recordkeeping would be realized by using a film dosimeter service.
- Other recordkeeping should be improved, such as recording radiation surveys where Du Pont employees might be affected by contractor radiation device use. Documentation, with the exposure records, is needed to explain why some dosimetry results are missing.
- Use of a "Hi-Plus" intensifying screen with routine chest X-rays instead of the "Par Speed" screen now used should be considered as new screens are purchased or old screens are replaced. (This would reduce radiation exposure to personnel during chest examinations by 50 percent.)
- Formal short-term training of the nurses in X-ray techniques and equipment is recommended since no previous formal training has been received.
- A contractor checks microwave ovens for stray radiation leakage each six months. Based on the frequency of use, leakage tests on ovens should be done quarterly. The contractor should calibrate his test meter at least annually and provide the Site with a report of calibration.

DUP 0502733

Heat Stress

The heat stress evaluation program, based on subjective analysis, is generally satisfactory. The Site has several recognized hot work areas, such as in the Ammonia Area, Methanol Area, and Nordel® but heat stress symptoms have infrequently been experienced by workers. However, plans are endorsed to study hot work areas to determine if informally established work/rest cycles are appropriate. Where air conditioned break areas are provided to relieve employee heat discomfort, such as in Nordel®, the cooling system should be maintained in good reliable working order. Several employee complaints were received concerning operation of this system.

An ESD consultant recently measured potential heat stress in the waste acid stripper building; his recommendations are forthcoming.

Previous Reports

A review of the 1977 Occupational Health Survey Report No. 7014-H, revealed the following recommendations which have not yet been adequately implemented:

- Documentation of discussions with employees concerning non-OSHA carcinogens. (Acrylonitrile discussions are adequately documented; other discussions are not.)
- Improved recordkeeping of radiation surveys.
- Heat stress analysis in the hotter work areas such as Ammonia, Methanol and Nordel®.
- Annual exhaust efficiency testing for exposure control systems such as welding exhausters.
- Updating the chemical hazard information system.
- Identification of noisy, portable tools.

Response to other recommendations is adequate.

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