PLAINTIFF'S
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AL-1390

(I.H.) NEWSLETTERS 1954-1965

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RETURN TO: ALCOA RECORDS STORAGE CENTER

BOX 3 LOCATION 76 TOP 4

INTERNAL CORRESPONDENCE May 4, 1964

6A

FROM THOMAS B. BONNEY

PITTSBURGH OFFICE

TO INDUSTRIAL HYGIENE COMMITTEE CHAIRMEN

RE: INDUSTRIAL HYGIENE NEWSLETTER
SAWING MARINITE

In recent months several incidents have occurred that prompted us to take a closer look at the potential problems associated with the sawing of Marinite. In the past, because of erroneous information given us about the composition of this material, we may have advised you poorly about the proper handling of it. In order to correct this, especially in view of the widespread use of Marinite, we felt that this Newsletter would be timely and appropriate.

Marinite is an insulating refractory board manufactured by Johns-Mansville. It consists of a mixture of asbestos fibers and diatomaceous earth bonded with an epoxy resin. In Alcoa it is widely used for headers in DC Casting Units and for trough linings. In order to be used for these applications, it is necessary that the Marinite first be sawed into appropriate sizes and shapes. Sawing generates a considerable amount of dust which is the main, if not the sole, cause of difficulty in handling this material. Were it not for the presence of the epoxy binder, proper control would consist simply of keeping the sawyers' time-weighted exposures below 5 mppcf, the threshold limit value for asbestos. However, the epoxy binder complicates the picture.

Although the surface of a cured epoxy resin system is almost completely inert, this is not true of the interior structure which contains an appreciable amount of unreacted resin and hardener. As a result, dusts from machining and sawing epoxy resin systems are likely to be quite irritating. Dermatitis from these dusts is quite common. They may also cause asthmatic-like reactions in certain sensitive individuals. (We have already experienced this in our Company.)

Because active components of epoxy resin systems are present in them, dusts from Marinite cannot be treated as mineral dusts. Additional precautions are necessary, and the saw should be equipped with exhaust ventilation. (This is in accord with the recommendations of Johns-Mansville.) Probably most of the fabricating plants will require this type of set up. Respiratory protection is no substitute for exhaust ventilation, except at locations where cutting Marinite is an unusual, infrequent, and brief occurrence.

Sawyers should wear long sleeved shirts to protect their arms from the irritant dust. Personal cleanliness is also important and the men should be instructed to wash up following their exposure to Marinite dust.

If any of the recipients have any specific questions or comments concerning Marinite, we will be pleased to hear from them.

The latest of the Hygienic Guides are enclosed: Acrolein, Aluminum, Ethylene Glycol Monoethyl Ether, Manganese, Petroleum Naphtha, Pyridine, Tetraethyl Lead, Allyl Alcohol, Allyl Chloride, Cyclohexane, Ethyl Chloride, and Triorthocresylphosphate.

Tom Bonney
Thomas B. Bonney

TBB/mje
Enclosures
cc/encl: Company physicians
G. H. Farrah, J. M. Plunkett, ARL
F. H. Illig, Pgh.
M. O. Colwell, L. V. Cralley, file

5/4/64

## Industrial Hygiene Committee Chairmen (24)

| | |
|---|---|
| K. W. Perry | Bauxite Al. |
| W. L. Mowe | Mobile |
| N. W. Nielsen ~~T. R. [illegible]~~ | Alcoa Fab |
| W.V.M.Williams | Alcoa Sm. |
| N. A. Hayes | Badin |
| W. S. Barr | Massena |
| O. L. Royer | Pt. Comf. Sm. |
| C. O. Turner | Pt. Comf. Ref. |
| H. A. Semken | Rockdale |
| E. B. Porter | Vancouver |
| R. L. Parsons | Warrick |
| G. D. Bruno | Wenatchee |
| A. J. Kukla | Chicago |
| D. J. Levin | Cleveland |
| W. M. Harris | Cressona |
| W. C. Harvey | Davenport |
| ~~W. C. Seipp~~ | ~~Detroit~~ |
| A. M. Miller | Edgewater |
| J. W. Foulke | Edison |
| L. S. Chambers | Lafayette |
| Arthur Hartwell | Lancaster |
| C. L. Bissonette | N.K. |
| R. E. Hospes | Richmond |
| T. I. McClintock | Vernon |

~~Feb., 1964~~

May 4, 1964 letter

24

## Plant Doctors

| Division | Works | Doctor |
|---|---|---|
| Raw Materials | Bauxite | James Bethel |
| | Rosiclare | John R. Duffey |
| Refining | Bauxite | [redacted] |
| | Mobile | Howard Walker, Jr. |
| | Pt. Comfort | John Griffin |
| Smelting | Alcoa | W. N. Dawson |
| | | ~~J. C. Phelan~~ |
| | Badin | A. F. Lapsley |
| | | ~~Orville Jack Duncan~~ |
| | Massena | Maurice J. Elder |
| | Pt. Comfort | [redacted] |
| | Rockdale | J. T. Richards |
| | Vancouver | F. J. O'Hara |
| | Warrick | Thomas C. Burger |
| | Wenatchee | L. C. Miller |
| Fabricating | Alcoa | ~~*W. N. Dawson~~ |
| | | [redacted] |
| | Chillicothe | Charles N. Hoyt |
| | Cressona | Ralph Lyons |
| | Davenport | A. W. Shafer |
| | | [redacted] |
| | Edgewater | Joseph Ferrante |
| | Lafayette | ~~No regular plant doctor~~ |
| | Lancaster | Carl C. Kessler |
| | Massena | ~~*Maurice J. Elder~~ |
| | New Kensington | Colin Kamperman |
| | Richmond | Ralph W. Dreyer |
| | Vancouver | [redacted] |
| | Rome | J. McDonough |
| Foundry | Chicago | Ralph P. White |
| | Cleveland | W. A. Engel |
| | Detroit | A. J. Szmigiel |
| | Edison | Malcolm Dunham |
| | Vernon | Victor H. Barbour |
| ARL | E. St. Louis | [redacted] |
| | New Kensington | D. A. Fusia, Jr. |
| Alcoa Bldg. | Pittsburgh | ~~W. Boyd Cook, Jr.~~ |
| | | ~~C. E. Anderson~~ |
| | | ~~E. A. Brethauer~~ |
| | | ~~R. McC. Coyle~~ |
| | | ~~Norman Davis~~ |
| | | [redacted] |

* = duplication

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MICHIGAN'S occupational health

VOL. 8, NO. 3 MICHIGAN DEPARTMENT OF HEALTH SPRING, 1963
Albert E. Heustis, M.D., Commissioner

# Construction Health Hazards

Technological advancements along with new chemical products have created a new set of health hazard control problems in the construction industry. And these problems seem to be more severe in the construction field which does not have either the site or personnel permanency of the manufacturing plant.

Instead, the construction industry is characterized by mobility; pick-up work crews; foremen who have little or no knowledge of the inherent hazards in some of the materials being handled by their men; difficult working conditions where weather is a significant problem; and a prevailing attitude that the generally rugged workers in the construction industry are not subject to health hazards.

We have selected a group of topics for consideration which we consider timely, varied, and potential sources of health problems for construction workers.

All of them have been dealt with at one time or another by personnel of the Division of Occupational Health. Every year, either by request or through its own initiative, the Division checks out and advises on many construction jobs.

**This is an extremely important function since more than 100,000 Michigan people work in construction and these workers daily face hazards which can be detrimental to their health.**

**Figure 1. View of three workers on an asbestos spraying job. The worker at the floor level feeds the material. The worker at the upper left tamps the surface. Note that all three are exposed to excessive quantities of asbestos dust and that their respirators are not being worn.**

These hazards can be injurious to health either through acute or long term exposure. The immediate asthmatic effects of a single toluene diiscyanate exposure or the pulmonary difficulties experienced by an asbestos insulation worker after 15 years on the job can both be serious health problems. Also, when considered in the light of lost time by workers which can mean severe economic loss to their families as well as to the employer, the problems become more important and more complicated.

In this publication, we will deal with four rather divergent types of construction techniques which present varying degrees of hazards to workers. They include: (1) application of epoxy-terrazzo floors and epoxy coatings; (2) spraying of asbestos; (3) application of red lead paint; and (4) pouring in place or application of polyurethane foam.

## *Epoxy-Terrazzo Floors & Epoxy Coatings*

Principal health problems associated with the application of epoxy resin base materials such as adhesives, paints, special surfacing mortars, and epoxy-terrazzo floors are dermatitis from skin contact with the amines in the mix, excessive exposure to toxic solvents used in some of the resin systems, and, in general, nose, eye, and throat irritation caused by the amine catalyst and the solvents. Completely cured epoxy resins are not believed to present such hazards.

Epoxy resin materials can be so formulated (by literally tailoring the molecules) that a wide range of desired properties can be obtained. Some adhesives can be made to present varying curing properties and unusual tensile strength. Surfacing compounds can be made impervious to almost all types of solvents. Paints can be made which are adaptable to conventional production spraying and baking operations in industry but which present unusual surface protection properties. And epoxy-terrazzo floors can be applied which are essentially non-shrinking, are impervious to most solvents, present a wide range of colors, are considerably lighter than comparable concrete type terrazzo floors, and have excellent strength characteristics.

**While the relatively high cost of many epoxy products has limited their general application in the building trades, their exceptional properties have resulted in a rapidly increased use in the building and construction industry for specialty applications. These include long-wearing paints with special finish effects on concrete block wall surfaces, epoxy terrazzo floors which have exceptional wear resistant properties, and special surface coating (paving application) on highways. The new International Bridge in Sault Ste. Marie has a thin layer of an epoxy water-resistant coating material between a concrete base and the top asphalt roadway surface. Purpose is to keep water from coming into contact with the concrete.**

Base material in manufacturing epoxy resin is ethylene glycol which is reacted with various types of amines to form a liquid pre-polymer. A wide variety of particulate type fillers such as synthetic fibers, sand, metal powder, carbon black, and wood dust are used to effect certain properties and appearance and polymerization of the pre-polymer is brought about with the addition of diethylenediamine or other complex polyamines (catalysts).

Rate of polymerization or curing can be varied by chemical formulation and the application of heat may or may not be required. During polymerization, various toxic amines are emitted and these can cause severe dermatitis or eye damage on contact or lung irritation if inhaled. Susceptible individuals can develop sensitivity to several of the amines used.

**In the epoxy-terrazzo floor application, marble chips are imbedded to form a unique terrazzo surface. The substance has the appearance of conventional cement terrazzo but is applied to a thick-**

**Figure 2. Materials used in application of epoxy-terrazzo floors and epoxy coatings can *be dangerous if allowed to come into contact with the skin. Please note the lack of skin* protection at the resin mixing operation.**

**Figure 3. Three workmen are shown troweling out a newly-poured epoxy-terrazzo floor. You will notice that the workman in the center is smoking a cigarette.**



412259 0226

ness of only 3/16 of an inch.

This epoxy-terrazzo can be applied directly over dry concrete or wood, both of which have to be properly prepared to receive the surfacing material.

Some of the adhesive or primer coats contain solvents such as xylene and toluene indicating the need for proper control. A mixture of marble chips and epoxy resin is then applied to the floor and troweled to a level of approximately 3/16 of an inch. This is followed by application of a heavy layer of marble chips which is spread uniformly over the entire floor and set in place with a roller.

After several days of curing, the floor is then wet-ground with water in a conventional manner. It has been reported to this Division that dermatitis is a common ailment among epoxy-terrazzo floor applicators apparently caused by the amine catalyst. But this has not been evident in the two studies conducted to date. Arrangements were made with a local manufacturer of flooring material to conduct occupational health studies at two jobs which were scheduled since we were interested in both the amine concentrations which developed during application of the flooring material and the xylene concentrations which built up as a result of release from the primer coat and the troweling operations. Use of xylene is necessary to ease troweling and surface rolling and to minimize adherence of the tools to the uncured resin mixture.

**In one recent study of the application of a conductive surface type terrazzo floor in a surgery suite, no significant concentrations of amines were found in the immediate work area (ranged from 0.1 to 0.2 parts per million), perhaps because of the marginal type ventilation provided in the room.**

It did not appear that any of the workers had dermatitis and no reports of skin difficulties were made to us. A combustible gas indicator was used to determine the concentration of xylene vapors in the breathing zone of the workers during various stages of troweling and rolling. It indicated vapor concentrations which reached a peak of approximately 600 parts per million when the solvent was first distributed with a long bristle brush (swishing in the air). In less than a minute, the solvent concentration dropped to about 400 parts per million and about eight minutes later the xylene concentration was reduced to about 40 parts per million where it remained until the next xylene application.

It appears that xylene or whatever solvent is used for easing the troweling and rolling job constitutes the greatest health hazard in application of epoxy-terrazzo flooring but that the solvent exposure can be reduced to acceptable values with the use of appropriate ventilation.

**Where the ventilation measures taken are not satisfactory, the use of approved respiratory protective equipment is indicated. It is also reasonable from the point of view of safety that the cleaning of all equipment with a solvent should be done out-of-doors where possible.**

Tools and containers for mixing the epoxy resin floor compounds are usually cleaned with toluene, xylene, acetone, or mixtures of solvents commonly known as lacquer thinners.

The flammability or explosibility problem does not appear to be severe but since flammable materials are being handled, necessary measures to prevent a solvent buildup to explosive levels or to minimize the possibility of ignition of either liquid or an air-vapor mixture should be taken.

**The need for ventilation during application of the flooring material has already been noted. There is also a need for good personal hygiene habits among workers to minimize effect of skin contact.**

**Warm water and mild soap should be available so washups may be done as frequently as needed and workers should receive instruction on proper work procedures as well as on the hazards of the materials they are handling. Solvents such as xylene and toluene should not be used for cleaning the skin but rather special skin cleaners should be made available for this purpose. Since there is a skin exposure problem, appropriate protective clothing including gloves should be worn.**

### Suggested Work Control Procedures

- **All workers on the job should be properly instructed on the toxic nature of materials they are to handle; the proper work procedures to minimize any hazard due to skin contact or inhalation; and obviously, proper application techniques to minimize exposure time.**
- **Appropriate ventilation should be provided wherever the work is being done to minimize the concentrations of amine or solvent which might develop. The rate of air flow should be sufficient to keep contaminants at levels generally below the maximum threshold level.**
- **Protective work clothing should be worn on the job so that as much of the body surface as possible is protected. The work clothing, particularly the gloves should be impervious to the materials being handled.**
- **Personal hygiene is very important. Workers should be encouraged to wash up with soap and water frequently (or use waterless cleaners); should minimize the use of solvents for skin cleaning (use specially prepared cleaners); and should do all their work in a way as to minimize exposure to any of the materials handled. This calls for neatness on the job.**
- **Although the flammability problem is not severe, it is nevertheless present, since flammable materials particularly solvents are used and the air vapor concentrations reached can be relatively high. Accordingly, smoking as well as other sources of ignition should be controlled on the job. Fire extinguishing equipment should be handy.**
- **Respiratory protective equipment such as chemical cartridge respirators may be required in certain areas where high solvent concentrations develop despite the use of ventilation. Such respirators should be available on the job, should be kept in proper repair at all times, and workers should be trained to use such equipment.**

## *Spraying of Asbestos*

Asbestos is commonly applied to interior surfaces. It is used mainly on exposed steel beams and girders in buildings where fireproof construction is required as well as on ceiling and ceiling aprons of auditoriums and meeting rooms. Because it leaves a finish which is somewhat soft, it is limited in use to areas which can be protected either by additional coverings or indirectly through inaccessibility.

Asbestos coatings may be applied either manually or pneumatically. The

Figure 4. Workman loads asbestos for pneumatic feed to spray gun. He is not wearing a respirator.

a finish coat mix. Analysis showed both materials were nearly 100 percent asbestos with a small amount of filler as a non-fibrous nature.

Findings of our dust study were discussed with representatives of the contractors, the building trades council, and business agents of every trade on the job. We indicated that dust concentrations were excessive but that the problem could be corrected by segregating and ventilating the operation and/or by the use of approved respirators by everyone on the floor in which the fireproofing operation was being carried out.

The follow-up visit revealed that the fireproofing contractors had provided a large wall fan which was used when the spraying was done. Also, the floor on which the crew was working was sealed off by means of plastic curtains. No other workers were required to work on the floor while spraying was taking place and if one elected to, he was supposed to wear a Bureau of Mines-approved respirator. These were on hand with each contractor providing them for his own men.

In another study in which the interior of a dome was being sprayed, the crew was uninformed of the asbestos inhalation hazard, respirators were available but not necessarily worn, and the dust concentrations exceeded 10-million particles per cubic foot of air in the workroom. Because of inaccessibility no breathing zone

information we present is primarily concerned with pneumatic application. The principal hazard in spraying asbestos is excessive contamination of the air with asbestos dust particles. Inhalation of excessive quantities of asbestos dust over a period of years on the job can result in serious lung difficulties.

The hazards of asbestos spraying are not only limited to the spray operators, but may affect anyone in or near the contaminated work area.

**Recently, this Division studied a routine asbestos spraying operation in which the spraying equipment consisted of a feeding hopper and a compressor connected with a flexible hose to a gun. Asbestos fibers from the hopper were fed into the flexible hose and propelled by a blower system to the spray gun where it was wetted with water (sometimes containing an adhesive). The amount of asbestos fibers and water applied in the final mix were controlled with a valving system on both the spray gun and the hopper feed mechanism.**

Although employees doing the fireproofing were provided with dust respirators, other tradesmen (electricians, plumbers, carpenters) were not similarly protected. They complained and a study was conducted quickly.

Present maximum allowable concentration for asbestos dust as recommended by the American Conference of Governmental Industrial Hygienists is 5 million particles of dust per cubic foot of air. A series of representative work room air samples were collected. Sampling locations were from 15 to 30 feet from the spraying operation and the dust concentrations were found to range from 14 to 59 million particles per cubic foot, considerably above the maximum allowable concentration level.

Two samples of the spraying materials were lab tested. One was a base coat material and the other

Figure 5. Asbestos spraying operation is shown.



412259 0228

samples were collected at the elevated height where the spray operator was located but it is assumed that the concentrations there were excessive.

Since the spraying operation is such that the maximum threshold level will be exceeded in almost all instances where the work is done unless control measures are applied, it is reasonable to expect that all asbestos spray contractors will adequately control the operations so as to minimize the health hazard to their workers.

### Suggested Work Control Procedures

- Educate all workers as to the asbestos toxicity problem and proper work techniques.
- Provide adequate ventilation so that the dust concentrations developed in the general workroom do not exceed the maximum threshold level.
- Wherever possible, segregate the asbestos spraying operations so adjacent areas in the work place are not contaminated with asbestos dust.
- Provide and make the wearing of Bureau of Mines-approved type respiratory protective equipment mandatory where the dust concentrations are excessive. Such respirators should be provided by the contractor.
- All employees engaged in such work should be given pre-employment physical examinations before being hired and should be given periodic physical exams. These examinations should include chest x-rays.
- Vacuum cleaner type surface cleaning procedures should be used in place of manual sweep techniques.

## Application of Red Lead Paint

After several investigations, this Division has confirmed that lead hazard problems on construction and highway work exist mainly as a result of lead-based paint coatings used on structural steel. Our attention was first directed to this problem as a result of reports indicating that paint crew employees on a highway bridge project had developed lead poisoning. Inquiries since directed to the highway departments in other states have not verified similar problems in these locations.

**Observation on the job indicates a general lack of knowledge of the seriousness of this problem by most workers and supervisory personnel. For example, on a routine highway bridge maintenance job involving sand blasting of the painted steel structural members, the workers were not wearing respirators. Air samples indicated lead concentrations ranging from 6 to 116 milligrams per cubic meter and dust concentrations ranging from 117 to 285 millions of particles per cubic foot of air.**

Lead may enter the body through inhalation, swallowing, or absorption through the skin. The latter can be ruled out in construction work unless gasoline containing tetraethyl or tetramethyl lead is handled by employees in a careless manner allowing it to make direct contact with the skin.

Inhalation is dangerous where wire brushing, sanding, or grinding is done, particularly with automatic tools, and where lead-based paints are applied with hot or cold air or airless spray methods.

**Swallowing is another serious mode of lead entry into the body and reflects personal hygiene habits which have been observed to be basically poor on outdoor construction projects. Lead contaminated work clothing, dirty hands, and activities such as smoking and eating on the job site can all result in swallowing hazardous amounts of lead.**

Our Division feels the problem is severe and the well-being of many workers is being endangered on an almost daily basis. On construction jobs, certain environmental control procedures should be implemented for the benefit of all employees including those of the subcontractors.

A major contractor may be able to put through an adequate program for his own employees because of direct supervision. But the problem is more difficult with subcontractors. Possibly, effective control can be initiated as a contract stipulation.

**Another important consideration is the educational approach through meetings and in making adequate and carefully prepared material available to work crews.**

The obvious answer to the lead paint problem is the use of a substitute paint. While we have been successful in this approach in several steel fabricating shops where iron oxide pigmented paint is now used, even in these places, job orders are received from time to time where the customer insists on lead type paint.

Paint manufacturers maintain that there are substitutes available which are at least as good as lead coatings. Apparently, they have not been sufficiently diligent in proving it. The alternative is effective protection of the worker on the job.

**In the area of protective equipment, respiratory protective devices such as the type approved by the Bureau of Mines for protection against lead dispersoid and organic vapors should be worn by all employees engaged in wire brushing, grinding, automatic sanding, or any other type of operation which produces any appreciable quantities of lead dust. While working in enclosed areas such as in bridge towers or in water tanks, workers should wear Bureau of Mines-approved air supply hoods. Supervisors should see that respirators are in good working condition and see to it that the men wear them as part of the job requirements.**

Protective clothing is important since contaminated clothing is a source of lead dust. A usual practice is to have lead workers in industry change clothing in locker rooms designed for the purpose. On arrival, workers change into clean work clothes and before departing, are encouraged to take showers and change back into street clothing. The work clothing is then laundered. Outdoor construction workers, especially, wear the same work clothing for extended periods of time. This is a source of contamination.

Personal hygiene is the most important single factor in preventing ingestion of lead and involves not only routine and deliberate washing of the hands and face but a personal consciousness of the need for extreme care in handling hazardous materials.

**Hot water, soap, and towels should be provided so that the men can keep reasonably clean. Wash-up procedures should be enforced particularly before the noon meals and before workers leave the job site.**

The use of waterless cleaners may be satisfactory as a substitute for soap and water in the event that they cannot be supplied. The fact that smoking and placing the hands in or near the mouth also can result in ingestion of lead should be emphasized to the workers.

In the care of the eyes and face, the use of face shields or safety glasses should be a mandatory requirement on all jobs where flying debris is present in the atmosphere. This is especially important in wire brushing, grinding, and sanding.

Effective supervision is another important factor. An occasional project engineer sometimes has little actual interest in the health and safety of his men, so it becomes important for the contractor to follow up on all jobs to see that conditions which could endanger health of the employees are controlled.

It's an excellent practice to see that all employees are given pre-employment physical examinations and that they be checked periodically when they are engaged in potentially hazardous work. All employees who may possibly be exposed to lead should be tested for lead absorption in accordance with the program outlined in Volume 5, Issue 1 (Fall, 1959), Michigan's Occupational Health bulletin. The Division is prepared to collect and analyze urine and blood samples submitted for evaluation of lead absorption where new biological control programs are being instituted.

Education of workers as well as supervisors is unquestionably necessary.

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### Suggested Work Control Procedures

- Educate employees as to the lead toxicity problem and in proper work techniques.
- Good personal hygiene habits are particularly important. Water, soap, and towels should be provided and workers should at least wash their hands thoroughly before eating and before leaving their work stations. Waterless hand cleaners should be provided where water is unavailable.
- Bureau of Mines-approved respirators should be provided and their use made mandatory where excessive dust (grinding, chipping, wire brushing) and paint pigment (spray painting) are given off.
- Use of frequently cleaned work clothing should be encouraged.
- Workers should be given pre-employment and periodic physical examinations.
- A biological testing program should be instituted where working with lead is a routine matter. A minimum program follows:

### Minimum Medical Program

This is a recommended minimum lead control program. For ease in interpretation of lead and blood levels, refer to Table 1.

Incorporate a routine biological test program for all employees exposed to lead:

(a) Urine samples to be taken at least every three months and examined for lead content. In areas of excessive lead exposure (air concentrations above 0.15 Mg/M³) urine samples should be obtained monthly from exposed workers.

(b) Blood samples to be analyzed for lead to be taken from all workers following urinary lead excretions greater than 0.15 mg Pb/1 urine. A second urine sample should be obtained at the same time for lead analysis.

(c) Blood and urine samples to be repeated on a monthly schedule from all workers excreting lead in concentrations of 0.15 mg Pb/1 urine or with blood levels greater than 0.05 mg Pb/100 grams whole blood.

(d) Remove workers from lead exposure areas where blood lead concentrations reach a level of 0.08 mg Pb/100 grams whole blood or above. Workers should not be re-employed in lead areas until biological samples indicate reduced levels of lead in these body fluids (urine — equal to or less than 0.15 mg Pb/1 or urine. Blood equal to or less than 0.05 mg Pb/100 grams whole blood).

## Pouring In Place or Application of Polyurethane Foam

The use of polyurethane resins in both foam products and other specialty items has grown remarkably in the past few years. The number of items made of polyurethane foam is almost endless and it enjoys particular popularity in the construction industry basically as an insulating material.

The chemical formulations used can be varied to produce polyurethane products of various chemical and physical properties and invariably involve a reaction of toluene diisocyanate with a polyester or polyether type compound.

During production of the foam, occupational health problems can develop because of the common use of toluene diisocyanate, which is a highly toxic material. In high concentrations, TDI can be lethal and in small amounts, it is very irritating to the mucous membranes, producing an asthmatic type effect.

Great care must be taken in its use and close engineering and medical supervision of the workmen are desirable. Poured-in-place insulation (between partitions) and a spray application to surfaces of steel storage tanks, for example, are two important uses in the construction field. The foams are made by metering and mixing the correct amount of toluene diisocyanate and other required ingredients (polyesters, polyethers).

TABLE I.

INTERPRETATION OF BIOLOGICAL LEAD SAMPLES

| Urine lead mg/liter | | Blood lead mg/100 gm. | |
|---|---|---|---|
| 0.01 to 0.06 | Non-occupational<br>Normal lead absorption<br>Re-check: 4 to 8 weeks | 0.02 to 0.04 | Non-occupational<br>Normal lead absorption |
| 0.06 to 0.15 | Occupational<br>Normal lead absorption<br>Re-check | 0.04 to 0.07 | Occupational<br>Normal lead absorption<br>Re-check: 4 to 8 weeks |
| 0.15 to 0.20 | Occupational<br>Hazardous lead absorption<br>Re-check: 2 to 4 weeks | 0.07 to 0.08 | Occupational<br>Hazardous lead absorption<br>Re-check: 4 to 8 weeks |
| 0.20 Plus | Occupational<br>Absorption compatible with lead intoxication<br>Recommend Blood lead test, Hemoglobin and Erythrocyte count<br>Routine urinalysis<br>Physical examination<br>Re-check: 1 to 4 weeks | 0.08 Plus | Occupational<br>Absorption compatible with lead intoxication<br>Recommend immediate re-check and removal from lead exposure area and physical examination |

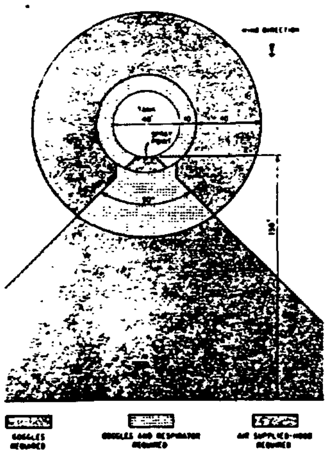

Figure 6. Personal protective devices as a function of areas around the structure being sprayed, wind direction, and spray point.

If the material is to be sprayed on to a surface, which is typical of the outdoor application to storage tanks for insulation purposes, all of the chemicals used are automatically metered through a special type spray gun unit. If the chemicals are to be poured between partitions or other cavities where it is to foam, gel, and cure it is simply a matter of metering and mixing the correct amount of materials and pouring them into the mold. In either case, where the foam is the result of the carefully metered automatic spray system or a manual paper cup mixing operation on the job site, a potential hazard exists.

**TDI, although generally used in amounts required for a complete chemical reaction, can be given off during the mixing, foaming, and curing procedures or can result from spillage. It can be irritating to the skin, eyes, and respiratory tract, cause eye injuries upon direct contact, and as noted above, can cause an asthmatic reaction in some people. Also, susceptible individuals may become sensitized to TDI.**

This contaminant can be controlled by providing ventilation and/or respiratory protective equipment at the various sources of contamination. Also, adequate facilities should be provided for decontamination of work areas in case of accidental spills of TDI. These should include adequate floor drainage, hoses, mops, and buckets. A decontaminant consisting of aqueous 5% ammonia containing 10% isopropyl alcohol or a water solution of sodium carbonate should be kept on hand. An oil absorbent can be used since it is helpful in drying up spills. The contaminated absorbent then must be removed quickly to a ventilated location and/or treated with one of the decontaminating solutions.

**Peterson, Copeland, and Hoyle, reporting on the potential health hazards of spraying polyurethane foam out-of-doors[1] have indicated that hazardous concentrations of TDI can develop at varying distances downwind of the spray area dependent upon "distance from the gun, spray gun elevation, formulation uses, temperature and humidity of the air, air pressure of the spray gun, rate of adduct (reaction product of an excess of TDI with a polyol) used, configuration and size of the object being sprayed, wind velocity, and the use of tarpaulins to reduce air turbulence."**

Based on their findings, there is no question but that the immediate spray crew at the spray point is in a vulnerable position because of the presence of excessive concentrations of TDI and should be provided with and made to wear air supply hoods and other protective clothing.

It was also found that in outdoor spraying, the evolution of TDI vapor from the foam surface, once applied, was an insignificant problem. The authors recommend that all persons within 150 feet downwind of the spray gun wear suitable eye protection. Figures 6 and 7 illustrate the recommended precautions when spraying outdoors. Definitions of the terms used in the drawings are as follows:

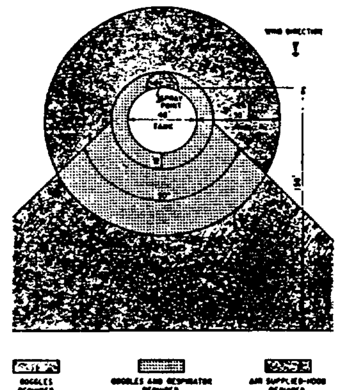

Figure 7. The recommended precautions shown in this chart are similiar to those in Figure 6, but in this case the spray point is upwind of the structure being sprayed.

[1]Peterson, J. E., Copeland, K. A., Hoyle, H. R., Health Hazards of Spraying Polyurethane Foam Out-of-doors, American Industrial Hygiene Association Journal Vol. 23, September-October, 1962.

**1. "Goggles required. This statement is intended to mean that the eyes should be completely protected from airborne material. Such protection can be achieved by wearing a full-face gas mask, soft-frame louvered goggles, chemical workers' tight fitting rubber goggles, etc. Experience has shown that regular spectacles with or without sideshields are definitely not adequate eye protection.**

**"In the area where goggles are required, some protection for the hair, clothing, and shoes is also recommended. The type of equipment used is immaterial so long as it will protect against contact with sticky particles drifting in the air. Also, in this area, respiratory protection equivalent to or better than an organic vapor respirator should be immediately available to all personnel. Such respiratory protection should be worn at any time when the characteristic odor and/or irritation of TDI is noticed.**

**2. "Goggles and respirator required. In this area, both goggles and respirator should be worn at all times when spraying is being done. The word goggles has the same meaning as above, and the goggles and respirator could, of course, mean a full-face gas mask, full-face respirator, etc. Coveralls are very desirable as are a hat (either soft or hard) and high rubbers. Hand protection (gloves of any type) is recommended.**

**"Goggles and respirator should be the minimum protective equipment for all persons within 10 feet of the spray gun when the gun is not in use but is connected to the adduct supply line. Such conditions may well occur when the gun is being cleaned or inspected on the job.**

**3. "Air-supplied hood required. This recommendation is intended to apply to all personnel within 10 feet of the spray gun, upwind, downwind, or laterally, while spraying is being done. Along with the air-supplied hood, impervious gloves, tightly buttoned coveralls, and impervious foot covering are also necessary."**

It should be obvious that the pouring of foam-in-place insulation indoors is also a matter requiring adequate control if the workers are to be protected.

### Suggested Work Control Procedures (Indoor)

- Educate the workers as to the toxic nature of the materials being handled and inform them of the work procedures to be applied.
- Segregate the area with tarpaulin or curtains of some type if spraying is done indoors or if the foam is poured in place or sprayed.
- Provide adequate ventilation control. In construction work, this is a rather loosely applied term and it is difficult to define here except to indicate that the air volumes exhausted to the outside from the work area should be such that in the general workroom area concentrations of TDI should not be in excess of the maximum threshold level of 0.02 parts per million.
- Where spraying is done, all personnel within 10 feet of the spray gun should wear air supplied hoods, impervious gloves, tightly buttoned coveralls, and impervious foot coverings. Chemical cartridge respirators are suitable for work crews involved in the manual pouring of resins. In the latter type operation it is important that the metering station be properly ventilated and that all foam debris and waste paper cups and other containers be kept in a controlled location, since these can be sources of contamination.

A considerable amount of development work in the application of polyurethane foam to mine walls is presently being done. The foam lining is desirable for its insulating properties in deep mines where air conditioning is applied (the rock stratum increases in temperature with depth) and may also serve to reduce resistance to airflow.

Fitzpatrick[2] and others in a recent paper described the results of their studies in a mine drift at a 4100 foot level where one to two inches of foam were applied using the spray gun technique. Methylene diphenyl diisocyanate (MDI) was used in place of toluene diisocyanate and the maximum vapor concentration was found to be 0.06 PPM.

They reported that the particulates from the spray contained reacting MDI in the spray area and for 50 feet downwind and that with adequate respiratory protection (see information on spraying) the airborne particulates containing MDI did not cause any obvious irritation to any of the men exposed.

## *Summary*

It appears that much of the success in the control of health hazards in construction work is dependent on the requirements of governing agencies, the insistence of the client, the determination of the contractors and subcontractors, the effectiveness of the supervisory personnel, and the attitude of the workers themselves.

To the variables just listed, can be added the general character of the construction industry, factors such as rugged weather conditions, lack of sanitary facilities, temporary work crews, pressure of schedules to be met, variation in operations (a plasterer may apply plaster one week and asbestos another), and the rough, changing nature of the site all important factors.

**Despite the foregoing, the problem of uncontrolled health hazards in construction work can be solved if there is a determination on the part of all involved to do so. Health and economic considerations leave no alternature but successful control.**

Six general methods which tend to minimize occupational health hazards in construction include: (1) adequate ventilation, natural or mechanical, to dilute concentrations of gases, vapors, mists, dusts, and fumes to safe levels; (2) use of wet methods to allay dust; (3) personal hygiene, including frequent washing of the hands and body and frequent changes of clothes to minimize skin contact with chemical agents; (4) personal protective devices, including respirators, gloves, clothing, boots or shoes and eye guards; (5) education by keeping workers informed about the nature of the potentially hazardous substances used and the physical agents encountered, including suitable protective measures for each situation; and (6) substitution of non-toxic of less toxic materials than are commonly used.

[2] Scheel, Lester D., Warren, John W., Laird, Frank J., Jr., Watson, Harold A., Harris, E. J., Beatty, Robert L., Fitzpatrick, Malcolm, and Craft, Bob F.; A Survey of an Application of Polyurethane Foam to Mine Walls Using Methylene Diphenyldiisocynate (MDI), paper presented at the American Industrial Hygiene Conference, 1963.

VOL. 8, NO. 3 SPRING, 1963

MICHIGAN'S OCCUPATIONAL HEALTH

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[redacted]

412259 0232

# The Growing Importance of Industrial Hygiene

JOHN D. HARPER
PITTSBURGH

Industry can feel justly proud of the Industrial Hygiene Foundation. It is encouraging to me that in an era when the expansive grasp of government is reaching out to regulate and control more and more phases of economic life, there is a voluntary nongovernmental research organization to turn to on problems of environmental engineering. The Industrial Hygiene Foundation not only conducts surveys and carries on research for dealing with these sensitive matters, but it also works hand in hand with many companies, applying its wealth of knowledge and scientific skills to their everyday problems.

The Foundation, staffed by people of high professional caliber, has a strong impact on the industrial community through its educational courses, seminars, meetings, reports, and publications. Its history is in itself an impressive record of the changing concept of occupational health practice and of the progress made by industry as a whole and particularly by those companies affiliated with the Foundation. This Foundation has well earned the support of industrial management.

Industrial hygiene today, concerned as it is with man, animals, property, and vegetation, is awesome in scope and challenging in responsibility. Its pattern over the years has been transformed from one of curative medicine to that of prevention of occupational illness, injury, and damage.

With changing times and the dynamic growth of industrial, political, economic, and social life, industrial hygiene needs have become very complex and have evolved into matters of grave responsibility for anyone who has created employment. Today, thousands of people work together in concentrated areas; machinery and materials of production are complex and ever changing. A multitude of laws and rulings regulate employer and employee, and the whole atmosphere of industrial activity is under the constant scrutiny of government and public alike.

The need for an industrial hygiene program becomes even more evident in the light of the demands made by industry's new environment, the medically enlightened but apprehensive public, the broadened compensation rulings for medical disorders and their effect on the employer, and the increased union and governmental activities in occupational medicine and hygiene.

Success in this field requires that management fully understands the scope and importance of industrial hygiene, the need for a well-planned program, and the benefits which can be achieved. Every such program should have realistic, attainable goals spelled out in terms of better employee and community relationships, actual savings in dollars and cents, and the proper fulfillment by a corporation of its role as good citizens.

Presented at the 27th Annual Meeting of the Industrial Hygiene Foundation, Pittsburgh, Oct. 24-25, 1962.

Vice President, Aluminum Company of America, 1501 Alcoa Building.

The scope of a program of industrial hygiene can be tailored by using as guidelines the number of employees involved, the nature of the work, the availability of qualified medical hygiene personnel, and the time and money alloted to the program.

A most important primary step is for management to make its endorsement of an industrial hygiene program known throughout the company so that all workers are aware of the interest and support backing the effort. Next, the atmosphere and contacts which form the over-all environment created by the very existence of the work site must be examined and understood. Within a plant there are many potential environmental health hazards ranging from light, toxic chemicals, noise, temperature, and vibration to the very important psychological relationships existing among employees.

Industry's responsibility in our culture is not confined to the welfare of people at the work site alone. Today, there is concern with everything emanating from the plant with which people may be in contact. Industry must realize that anything emitted into the air and the water, as well as products which emerge from the plant, may carry potential health hazards. Thousands of difficulties have arisen from smoke and fumes, from water pollution, and from other atmospheric contaminants and elements, resulting from industrial production.

While such a wide scope of responsibility is staggering, it presents no challenge that cannot be overcome by a management willing to take direct action wherever possible while overseeing the job to fulfillment. This requires a constant surveillance of man and his environment. The environmental factors must be recognized, measured, and thoroughly understood and, where necessary, controlled and changed to meet adequate health standards. To do this, it is necessary to have qualified industrial hygienists oversee the program. The industrial hygienist's job is to study all aspects of every potential environmental health hazard. Working closely with the plant doctor, nurse, safety engineer, production people, and other personnel whose jobs are associated with occupational health problems, the industrial hygienist must constantly maintain a 2-way channel of communication with all of them. The industrial hygienist should collect and analyze the thinking of others and make sound recommendations to management based on such over-all knowledge and experience.

Perhaps the heart of an industrial hygiene program in the preventive sense is the building of a constant awareness of existent potential hazards. Because everyone at a work site is involved with atmosphere and contacts, this awareness can only be built up through mass employee communication. Industrial hygiene should be stressed in training programs, house organs, letters to employees, meetings, bulletin boards, and by any other communication methods used to reach the various levels of company personnel.

The attitude of every employee is conditioned by the way in which he gets along with others and especially with those who supervise his work. Healthy attitudes built on happy relationships can do much to improve the working atmosphere for all while lessening the threat of environmental health hazards. Management is well advised to train its supervisory people in human relations.

Every enlightened management should scrutinize industrial hygiene aspects very closely before making decisions such as the selection of new plant sites, changes in plant processes, and additions to and relocations within present plant areas. It is of utmost importance that all problems regarding environment and contact be referred to properly qualified personnel who should be authorized to handle them.

Study, plan, and action are as important outside of the plant and in the community as they are at the work site. A constant watch for actual and potential trouble spots with strong concentration on preventive measures is the key. Out-of-plant problems offer many opportunities for cooperative research where other companies, industries, and foundations are linked together in a common interest. Such cooperative ventures are especially helpful for companies which lack

# Disability Benefits

*Federal or State Administration*

R. NEWELL LUSBY
NEW YORK

Perhaps no single characteristic of today's American society is more troublesome to many of us than one emphasized by the dramatically improved communication facilities of our time. In any radio or television newscast, daily newspaper, or periodical dedicated to consideration of serious subjects the attentive man will find more than enough material to strain his intellectual capacity. There are problems of public health, housing, international disarmament, balance of trade, highway safety, and of criminal law enforcement. These and a multitude of others are before us. Any one of them constitutes an impressive challenge to the capabilities of intelligent men. Among my friends there is an alarming tendency to consider the solution of these problems to be completely beyond the capabilities of the individual. Collaterally I find a growing tendency to leave responsibility for the solution of the problems to so-called "experts." It is this tendency to devote more and more of one's energies to the problems in one's personal affairs and less and less attention to the problems of the community as a whole which may well be the most serious threat to our society today.

The founders of our country held the firm conviction that our form of government would survive only if every individual made a real contribution to the solution of the problems of his village, state, and nation. One of the major philosophical conflicts between the founders centered about the ability of citizens to assume responsibilities inherent in the representative democracy form of government. There were those like Hamilton who thought that our nation could survive and prosper only if it were governed by an oligarchy of the educated and the wealthy, but the view that prevailed, the concept upon which the structure of our government ultimately was built, was the concept that the power of government lay in the people and

Presented at the 27th Annual Meeting of the Industrial Hygiene Foundation, Pittsburgh, Oct. 24-25, 1962.

Vice President, America Fore Loyalty Insurance Group, 80 Maiden Lane.

24

the money and manpower to cope with problems on their own.

There are in existence several governmental agencies specifically set up to work in the field of industrial hygiene. Many of these agencies have already done extensive and costly research and can lend competent help and sage advice to industry. Certainly their resources should be thoroughly considered and utilized to the fullest extent. While considering government as a partner in this work, most of the standards by which a company's industrial hygiene program must operate up to now have been government-made. These rules are established primarily by legislation, commission ruling, and court decision. To maintain a position of sovereignty with the power of checks and balances against the ever increasing rule of government, it is essential to work out problems on an individual basis or in concert with other private interests. Failing this, authority will be surrendered to the government, and the future will see a centralized control in which we have little voice.

There are several ways of helping to insure private enterprise in this field. Since so many rules are created by legislators and commissions, it is extremely important that industry keep such authoritative people fully informed so that whatever standards are set will be realistic and based on first-hand knowledge of the problems involved. Wherever possible, industry should encourage its knowledgeable people to serve on commissions working for the benefit of industry. The voice of industry can be heard in this way and its interests well represented.

In the days ahead—when all signs seem to point to an even greater growth of industry and technology, the forces of environment and contact threaten to become even more complex and challenging. One evidence of this growing complexity is seen in the health and safety clause which is now being written into many union contracts. In essence, this clause gives a worker the right to walk off a job if he feels that working conditions are unsafe or unhealthy. Thus, it strongly behooves management to plan for a healthy wholesome working environment. If management does not, the government will.

If no industrial hygiene program exists, industry has no rapport with its employees or with the community in this most important phase of relationship—health and its preservation. Without a sound plan, compensation hazards mount with consequent rising losses in time, money, and morale.

An employer has an obligation to provide a safe and healthful atmosphere for those he hires and should be solicitous toward the effect his working site has on the surrounding community. Any industrial hygiene program, to be successful, should be on an individual basis, tailored to the particular needs and problems of the location involved. In the long run, industry will be a major beneficiary of such a plan.

There are many more factors in this wide scope of contact and environment. Today, industrial health is an integral part of managment's and employees' concern. It demands a plan of action; it promises a profit in realistic benefits; it challenges all of industry to accept a distinct obligation, and warns that if it is forsaken the price of default is rigid governmental control.

John D. Harper, Vice President, Aluminum Company of America, 1501 Alcoa Building, Pittsburgh 19, Pa.

To receive Industrial Hygiene Newsletters (24)

INDUSTRIAL [illegible] COMMITTEE CHAIRMEN — [illegible] 1963

K. W. Perry — Bauxite Ar.

M. L. Howe — Mobile

T. R. Cantrell — Alcoa Fab.
W. V. M. William — Alcoa Sm.

W. A. Hayes — Badin

W. B. Barr — Massena

O. L. Royer — Pt. Comfort Sm.
C. O. Turner — Pt. Comfort Ref.

H. A. Seaken — Rockdale

E. B. Porter — Vancouver

R. L. Parsons — Warrick
G. D. BRUNO ~~O. W. [illegible]~~ — Wenatchee

H. E. Hillstrom — Chicago

D. J. Levin — Cleveland

W. M. Harris — Cressona

~~S. H. [illegible]~~
~~J. R. Marsh~~ W.C. HARVEY — Davenport

W. C. Seipp — Detroit

A. M. Miller — Edgewater

J. W. Foulke — Edison

L. S. Chambers — Lafayette

Arthur Hartwell — Lancaster

C. L. Bissonette — New Kensington

R. S. Hespes — Richmond

T. I. McClintock — Vernon

412259 0237

To receive Industrial hygiene newsletters

## Company Doctors

5/63

| Division | Works | Doctor | Hired |
|---|---|---|---|
| Raw Materials | Bauxite | J. L. Martindale | |
| | Rosiclare | John R. Duffey | |
| | Suriname | I. D. Guicherit | |
| | | R. Dawson | |
| | | P. Nassy (Paramaribo) | |
| | | A.B.G. Tjon A Tsien | |
| | | J.Tjong Tjin Joe (Afobaka) | |
| | | L. B. Olmtak | |
| | | H.L.A. Kleine (Paranam) | |
| Refining | Bauxite | *J. L. Martindale | |
| | E. St. Louis | ~~V. P. Siegel~~ | |
| | Mobile | Howard Walker, Jr. | |
| | Pt. Comfort | John Griffin | |
| Smelting | Alcoa | W. N. Dawson | |
| | | J. S. Phelan | |
| | Badin | A. F. Lapsley | |
| | | Orville Jack Duncan | 4/63 |
| | Massena | Maurice J. Elder | |
| | Pt. Comfort | *John Griffin | |
| | Rockdale | J. T. Richards | |
| | Vancouver | F. J. O'Hara | |
| | Warrick | Thomas C. Burger | 5/63 |
| | Wenatchee | L. C. Miller | |
| Fabricating | Alcoa | *J. S. Phelan | |
| | | *W. N. Dawson | |
| | Chillicothe | Charles N. Hoyt | |
| | Cressona | Ralph Lyons | |
| | Davenport | A. W. Shafer | |
| | | Emil Stimac | 4/63 |
| | Edgewater | Joseph Ferrante | |
| | Lafayette | No regular plant doctor | |
| | Lancaster | Carl C. Kessler | |
| | Massena | *Maurice J. Elder | |
| | New Kensington | Colin Kamperman | |
| | Richmond | [illegible] | |
| | Vancouver | *F. J. O'Hara | |
| | Rome | J. H. McDonough | |
| Foundry | Chicago | Ralph P. White | |
| | Cleveland | W. A. Engel | |
| | Detroit | A. J. Szmigiel | |
| | Edison | Malcolm Dunham | |
| | Vernon | Victor H. Barbour | |
| ARL | New Kensington | D. A. Fusia, Jr. | |
| Alcoa Bldg. | Pittsburgh | W. Leigh Cook, Jr. | |
| | | B. A. Brethauer | |
| | | R. McC. Coyle | |
| | | Norman Davis | |
| | | C. E. Anderson | |
| | | W. B. Tuttle | |

* = duplications

#12

August 21, 1958

INTERNAL CORRESPONDENCE

FROM LESTER V. CRALLEY

PITTSBURGH

TO
R. S. Adams - Olean
P. B. Colby - Garwood
E. N. Goas - Cressona
W. E. Goza - Pt. Comfort
F. P. Haluska - Cleveland
N. A. Hayes - Badin
G. W. Hutton - Wenatchee
B. D. Kent - Davenport
J. F. LaClair - Lancaster
J. H. Long - E.St.Louis
A. B. Masters - Lafayette
R. H. Moore - Rosiclare
J. J. Moroney - Massena
W. L. Mowe - Mobile
C. G. Orr - Alcoa Fab.
R. E. Paine - Vernon
R. L. Parsons - Warrick
A. W. Petrey - Vancouver
J. T. Quirk - Bridgeport
J.W. Schachtele - Chillicothe
R. E. Schenck - Detroit
H. A. Semken - Rockdale
D. F. Shantz - Richmond
C. S. Short - N.K.
C. L. Teubert - Chicago
E. M. Trimble - Bauxite M.
R. E. Whitson - - Bauxite Al.
W.V.M. Williams - Alcoa Sm.
E. B. Youngblut - Edgewater

Re: INDUSTRIAL HYGIENE

Attached are hygienic guides for the following substances:

Asbestos
2-4 Dinitrophenol
Ethylene Dibromide
Lead and its Inorganic Compounds
Methyl Bromide
Silica
Sodium Chlorate
Uranium (Natural)

412259 0239

LVC:DB

L. V. Cralley

cc: A.L.Alexander - Alcoa Sm.
C.T.Bardo -Massena
NO enclosure — C.G.Bell - Cleveland
R.H.Brown - Mobile
J.E.Burns - Warrick
Frank Cox - Alcoa Fab.
B. H. Droz- Wenatchee
A. L. Gantt - Badin
O. L. Goelet - Detroit
G. L. Hunting- Vancouver
W. G. Martin - Rockdale

A. B. Masters - Lafayette
John Miner - Buffalo
E. J. Mulligan - Pt. Comfort
F. H. Regehr - Vernon
A. W. Westfall - E. St. Louis
G. D. Wheeler - Pt. Comfort
L. L. White - Bauxite Al.
T. B. Bonney & J. M. Plunkett - N.K.
No encl. — C. L. Bradshaw & W. R. Gilliland - Pgh.

H & S
Industrial Hygiene

FROM D. A. WHITFIELD
MATERIALS AND STANDARDS SECTION
PITTSBURGH OFFICE - 3 WPH

TO MEMORANDUM

BDD
~~EER~~
TBB
RMJ
HGS

JUN - 5 1979

JD
CCD
DB
LMN
EDS

1979-05-29

RE: HAZARDOUS MATERIAL CONTROL COMMITTEE
PLANT VISIT - ROCKDALE OPERATIONS - 1979-05-22 & 23

The following four members of the Corporate Committee visited the Alcoa Rockdale Operations on May 22 and 23: J. H. Dudas, A. B. McKee, R. E. Toth and D. A. Whitfield. The purpose of the visit was to meet with representatives from all departments of the plant (see Attachment "A"), to describe the Corporate Committee's functions, and to become better informed on the plant activities and problem areas.

The committee members were well received by the Rockdale Operations personnel. Mr. Joe Dudas opened the discussions with 35 mm slides describing:

1) The nature of the hazardous material control problem within Alcoa.

2) The responsibilities of the Corporate Committee, and

3) The activities of the committee regarding DOT requirements, OSHA standards, Alcoa Material Data Sheets, in plant labeling system, and Hazardous Material Training.

He requested that the plant review the proposed Material Data Sheet passed out and suggest possibly a more useful arrangement of items. Eventually within the Alcoa family all plants having the same materials will have the same data sheets. He stated that all plants will be requested to submit a list of their top 25 candidates for most hazardous material. The plants will be requested to help develop the data sheets on selected materials by the end of the year. To spread the work load, Rockdale's input is needed.

Rockdale stated they had written for OSHA data sheets. They presented a copy of their book on plant materials covering hazardous and non-hazardous materials. This was well documented and presents a good basis for the Material Data Sheets. They expressed concern regarding the handling of Bulk Soda Ash and disposal of PCB's in dielectric components. Mr. A. McKee will give Rockdale some direction on the disposal of PCB's.

Mr. Jerry Congleton listed hazardous materials on the blackboard and the committee spent the balance of the day touring the plant areas wherein the listed hazardous materials were stored and used. Attachment "B" lists a first attempt at Rockdale's most hazardous materials.

ALCOA

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6F-4563

## ATTACHMENT "A"

### Hazardous Material Control Meeting
### 1979-05-22 & 23

### Rockdale Operations [redacted]

| | | |
|---|---|---|
| Allan Clayton | - | Chief Chemist |
| Jerry Congleton | - | Safety Manager |
| Jim Davis | - | Plant Security Manager |
| Dusty Essary | - | Engineering Manager |
| Gene Fontaine | - | Acct. Supr. - Cost/Power |
| Jack Fry | - | Purchasing - Transportation |
| Byron Gardner | - | Summer Safety Engineer |
| John Havins | - | Production Manager |
| Robert Hoskins | - | I.G.C. Safety & Security |
| Glade Lantz | - | Technical Manager |
| Nelson Mueller | - | Safety & Health Administrator |
| Brooks Parker | - | Environmental Supt. |
| Ted Randall | - | Ingot Plant Supt. |
| Ed Remaley | - | Mech. Maint. Supt. |
| Dave Smith | - | Service Supt. |
| Rod Stone | - | Chief Ind. Engr. |
| Larry Tate | - | Atomizer Supt. |

## ATTACHMENT "B"

### Most Hazardous Materials
### at Rockdale Operations

Chlorine
Propane
Diesel Oil
Gasoline
All Mineral Acids
  ($HCl$, $H_2SO_4$, $HNO_3$, $H_3PO_4$, Perchloric)
Solvents
  (Methyl Naphalene, Trichlorethylene, Varsol, Kerosene
  and other chlorinated hydrocarbons)
Alkalies
  ($Na_2CO_3$, $NaOH$, NaHipoh, Lime, $NH_4OH$)
Asbestos
Silica Insulation
DBPC flaked anti-oxidant
PCB's
Compressed Gases ($O_2$, Acet., Argon, $H_2S$, $CO_2$, $N_2$)
Atomized Powder
Molten Material (Bath, Alum., Cast Iron, Lead)
Coal Tar Pitch