From R&D CENTER - 401-3X9
With 236-1365
Date December 5, 1985
Subject EAST PITTSBURGH, PA SWITCHGEAR DIVISION
PLANT CLOSEOUT AUDIT, DRAFT REPORT

To WESTINGHOUSE BUILDING - 1557
B. A. Kerns, Manager
Environmental Control

I visted the subject plant today with S. Graham to perform a closeout audit. J. A. Sensue accompanied us on our tour. During an extensive tour of this facility, I noted the following items of industrial hygiene concern.

Asbestos was present only as pipe lagging. There was a considerable amount of this material. It was in good to fair condition. I did not observe the presence of any sprayed on, fluffy or cementitious material. Areas which formerly handled asbestos as a fabrication material were stripped bare and no waste remained.

In the Plating Area all the equipment and chemicals had been removed.

Some of the paint spray booths have been sold and removed. Some remain. Those that remain are relatively clean.

The industrial hygiene records for this division will be maintained by Joseph Parsons. The East Pittsburgh Safety Department has a duplicate set of the industrial hygiene and medical records. The original medical records will be kept by the East Pittsburgh Medical Department.

There are outstanding workers compensation claims. These records will be maintained by Joseph Early of Gates-McDonald (an insurance firm). James Hogan stated that anyone on modified employment at layoff is getting compensation and that anyone on compensation at time of layoff will get total disability.

There was some x-ray equipment, but it has been removed.

There were some radiation sources, but they have been removed.

J. A. Sensue stated that all equipment and chemicals that have been removed were disposed of properly.

K. M. Goellner

K. M. Goellner, C.I.H.
Senior Industrial Hygiene Engineer

WIH 0870

TO: George Kita
Abingdon, VA

INDUSTRIAL HYGIENE
PLANT AUDIT
at
ABINGDON, VA
on
FEBRUARY 4, 1980

Diane Whittier
Industrial Hygiene Engineer
Corporate Industrial Hygiene
R&D Center - 401-3X9
Pittsburgh, PA 15235

WIH 0883

SUMMARY

A Corporate Industrial Hygiene Audit was conducted at the W Abingdon, VA facility on February 4, 1980 at the request of George Kite, Safety Supervisor. The audit was performed by Diane Whittier, Corporate Industrial Hygiene Engineer.

The areas of concern were: the Quality Control Lab for CMCR Department, the Bare Wire Department, and the Insulation Department. The Quality Control Lab had a potential exposure to nitric acid and/or nitric oxides. The Bare Wire Department employees had complained of oil mists, and some employees in the Insulation Department had a dermatitis problem.

Recommendations for Industrial Hygiene at Abingdon include air ..mpling on employees in the enamel tower area, the CMR Quality Control Lab and in the lub bin. Other areas of concern are: the poor housekeeping in several areas of the plant, flammables in non-approved containers, and smoking in areas where flammable materials are used.

I. INTRODUCTION

At the request of George Kite, Safety Supervisor of the Abingdon, Virginia facility, an Industrial Hygiene Audit was performed on February 4, 1980. The audit was conducted by Diane Whittier, a Corporate Industrial Hygiene Engineer.

During this survey, the Abingdon facility employed about 285 hourly workers on four shifts. The plant was approximately ten years old and the chief product was copper wire.

The Industrial Hygiene and Safety program at Abingdon was the responsibility of Goerge Kite. The site employed neither a nurse nor a doctor. Pre-employment physicals were performed by an outside physician and there were no annual physicals given. Audiometric exams were performed biannually by George Kite on employees who worked in the CMCR Department.

The plant had a mandatory safety shoe and eye protection program which was enforced. Also, ear protection was mandatory in the CMCR Department.

The W Material Card system was in use at the Abingdon facility; however, they did not routinely request Material Data Sheets (OSHA 20 forms) from their suppliers. Materials came into the plant in tanks and drums. Not all of the materials were labeled with the W Material Number because the supplier would not do this for small orders. The only warning labels which appeared on the containers were those of the manufacturer. W Warning Labels were not used.

After reviewing past records, it was noted that Corporate Industrial Hygiene had surveyed the Abingdon facility in March, 1978. At that time, air samples were obtained for copper dust, xylene, toluene, benzene and fibrous glass. Since that time, OSHA (both state and federal) have visited the facility several times. As a result, Abingdon received two serious citations for safety violations from the federal OSHA in August, 1979 and two serious citations for safety violations from the state OSHA two months later. These violations had subsequently been corrected.

Several programs had been instituted at the Abingdon facility. First, a training program on accident prevention for all new employees had been set up.

There was also periodic training for the employees. George Kite conducted these training sessions. Secondly, weekly safety meetings had been held in one or the other of the three departments on a rotating basis. These meetings included George Kite, the general supervisor, the first line supervisor and one hourly employee. The program, which was begun in 1978, had resulted in a decreased accident rate according to George Kite. Finally, over the last several months, George Kite and a couple of the engineers had been conducting monthly tours of the plant looking for violations of the OSHA Standards in Safety.

II. SURVEY

A. CMCR DEPARTMENT

The employees in the Quality Control Lab were complaining of vapors coming from a nitric acid test done on the lub used in CMCR. The test included nitric acid, lubrication in water, soda ash, kerosene and alcohol. This mixture was heated to the boiling point for ten minutes one time per shift. There was no local exhaust ventilation in this lab.

The CMCR Department was where the copper wire was formed. The major problems were noise and possible copper dust exposure. The noise problem was handled by isolation of employees and personal ear protection. The air concentration of copper dust was checked in 1978 and found to be well below OSHA standards for dust. This operation should not produce copper fumes as long as the temperatures are kept well below 2567° C, the boiling point of copper.

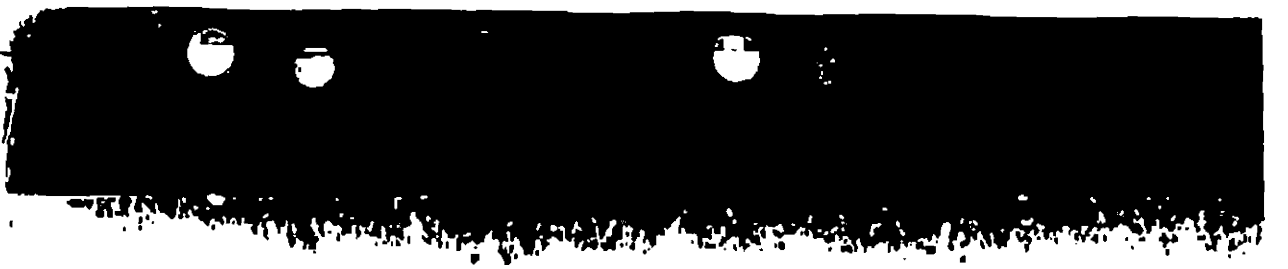
B. BARE WIRE DEPARTMENT

Most of the lubricating oils used here are water soluble. However, one oil, Shell Diala AX, is a mineral based oil. Oil mist collectors had been installed on the rolling mills where the worst conditions occurred. There was oil on the floor in several places, especially in the lub bin, which created slippery conditions.

C. INSULATION DEPARTMENT

The employees in the glass room had complained of skin irritation when they began using the Calgon 107 barrier cream. Before this time, they had been using Calgon cold cream and experienced no skin problems. The skin problem was worse in the winter, so it may have been partially due to the cold, dry air. In addition to fibrous glass, the employees came into contact with xylene. The xylene, which was kept in the work area in paper cups, was used to soften scrubber washers so they could be inserted easily. It was noted that smoking was permitted in the glass room, even though xylene is flammable.

The enamel towers were located nearby. The major solvents used were cresylic acid, phenol, xylene, petroleum distillates and isopropyl alcohol. The enamels and varnishes were used in a trough through which the wire passed



in order to coat the wire. The employees spend very little time in the immediate area of the enamel trough; however, they checked it periodically throughout the day.

III. RECOMMENDATIONS

In general, it is important that Abingdon have all incoming materials labeled with the W Material Number and the appropriate Warning Label. This facilitates identification of toxic materials and provides information on the handling required for the particular material. In the near future, Corporate Industrial Hygiene will computerize all industrial hygiene data and this program will be based on the W Material System.

The training program, safety meetings and safety surveys are excellent preventative tools and should be continued. However, it is recommended that employees sign a roster upon completion of the training in order to substantitate training records.

A. CMCR DEPARTMENT

The quality control lab in CMCR should have a chemical hood installed and all tests should be performed under the hood. The employees who perform the nitric acid test should be sampled for nitric acid and nitric oxide exposure. Equipment was left with Mr. George Kite for performing the nitric oxide test.

B. BARE WIRE DEPARTMENT

Housekeeping is a problem here. There was oil on the floor in several places--especially in the lub bin. These small spills should be covered with sawdust or something similar in order to prevent falls.

Employees who work with mineral based oils, such as Shell Diala AX, should be monitored in order to determine their exposure to oil mists.

C. INSULATION DEPARTMENT

With respect to the dermatitis problem, the employees should use the hand cream which is most effective for them. If the cold cream is preferred by the employees, then continue its use. If possible, supply both types of cream and label them so workers are aware of the purpose of each type of cream.

In addition to the fibrous glass, xylene, which is used to soften washers, is also a skin irritant. Employees should wear protective gloves while softening and inserting the washers.

WIH 0889

Xylene is toxic and flammable; therefore, it must be contained in a safety can such as W M 76210CA or 76210CB and labeled with Name, W Material Number and W Warning Label #34633. Also, smoking must be prohibited in this work area.

The employees who work in the enamel tower area should be monitored for possible exposure to cresylic acid and phenol. There are other solvents used in this area, but the aforementioned ones are the primary solvents. Xylene is another major solvent, but this chemical was checked during the Benzene Study in 1978.

A plant wide air sampling strategy should be planned. The areas to check are nitric oxides in the CMCR lab, oil mist in the Bare Wire Department, and cresols and phenols in the Insulation Department. For advice on sampling procedures, please contact W Corporate Industrial Hygiene. Or, in the event that the sampling work must be contracted out, call W Corporate Industrial Hygiene. Also, please send to Industrial Hygiene copies of all data collected with respect to air samples.

WIH 0890

CORPORATE INDUSTRIAL HYGIENE
236-5847
March 17, 1980
PLANT AUDIT

D. E. Baldwin
Plant Manager
Abingdon, VA

A Corporate Industrial Hygiene Audit was conducted at the W Abingdon, VA facility on February 4, 1980 at the request of George Kite, Safety Supervisor. The audit was performed by Diane Whittier, Corporate Industrial Hygiene Engineer.

The areas of concern were: The Quality Control Lab for CMR Department, the Bare Wire Department, and the Insulation Department. The Quality Control Lab had a potential exposure to nitric acid and/or nitric oxides. The Bare Wire Department employees had complained of oil mists, and some employees in the Insulation Department had a dermatitis problem.

Recommendations for Industrial Hygiene at Abingdon include air sampling on employees in the enamel tower area, the CMR Quality Control Lab, and in the lub bin. Other areas of concern are: the poor housekeeping in several areas of the plant, flammables in non-approved containers, and smoking in areas where flammable materials are used.

It is important that Abingdon expand its use of the W Material Number system. Not only does this system facilitate identification of toxic materials, but the system will be the basis of the computerization of Industrial Hygiene data. The computer system, which will be in operation by the end of 1980, will tabulate and store corporate wide Industrial Hygiene information.

C. Wayne Bickerstaff, Manager
Corporate Industrial Hygiene

CWB/jme

P.S. A complete report has been sent to George Kite at Abingdon.

WIH 0891

Westinghouse
Electric Corporation

June 17, 1985

WTH 0912

Mr. E. Ferretti
General Manager
Galileo Argentina, C.I.S.A.
Casilla de Correo 1686
- COD Postal 1000
Buenos Aires, Argentina

Subject: Industrial Hygiene and Safety Survey

Dear Mr. Ferretti:

Purpose
An Industrial Hygiene and Safety Survey was performed at the Galileo Plant in Buenos Aires on April 15, 1985. This survey was initiated by Corporate Environmental Affairs and the following finding and action was presented to plant management during an exit briefing:

The exposed asbestos on the paint drying oven must be covered.

It was evident that considerable effort has been devoted to plant industrial hygiene and safety programs by the industrial hygiene and safety technician.

I would like to thank you and your plant personnel for their assistance and cooperation during our survey. If you have any questions, please contact me.

Very truly yours,

C. W. Dickerstaff, Manager
Corporate Industrial Hygiene

Westinghouse
Electric Corporation

June 17, 1985

Mr. R. Zanlongo
Plant Manager
Galileo La Rioja, S.A.
Casilla de Correo 44
5300 - La Rioja Argentina

Subject: Plant Industrial Hygiene and Safety Survey

Dear Mr. Zanlongo:

Purpose
An Industrial Hygiene and Safety survey was performed at the Galileo Plnt in La Rioja on April 167, 1985. This survey was initiated by Corporate Environmental Affairs and the following f..dings and actions were presented to plant management during an exit briefing:

A. The eye protection program must be rigorously enforced.

B. Employes who work with superglues must be cautioned against accidental exposure to the eyes and emergency first-aid.

C. Noise protection, e.g. ear muffs, must be implemented in the air compressor room.

D. Install a high temperature warning sign on the tin alloy oven.

E. The Environmental Affairs Department supports a capital appropriation for the final stage of the septic tank installation program.

F. Efforts should be made to prevent flies in the kitchen and cafeteria.

G. All gas cylinders must be secured.

I would like to thank you and your plant personnel for their assistance and cooperation during our survey. If you have any questions, please contact me.

Very truly yours,

C. W. Bierstaff, Manager
Corporate Industrial Hygiene

WIH 0913

East Pittsburgh Works

June 3, 1960

Plant Visit Report

BLOOMINGTON WORKS
Mr. J. C. Fink,
Plant Manager

cc: Bloomington, Mr. James Newell, Assistant Manager
cc: Bloomington, Mr. W. R. Rose, Industrial Relations Manager
cc: Bloomington, Mr. Roy Dunlap, Safety and Security

Following is a belated written report of my plant visit on April 8, 1960. Following are recommendations, many of which were discussed with Mr. Dunlap and others during the time of the visit.

TEST LABORATORY

Chemical Hood

The face velocity of the chemical hood in this area was only 50 fpm with the window wide open. Since the hood is not used much of the time the window should be pulled down to a position where the face velocity will be approximately 100 fpm. It would be desirable to construct and install the window positioning latch that was described at the 1960 Spring Workshop Session. At the same time, it would be desirable to place 45 degree angle wings around the edges of the window in order to eliminate eddy currents, which frequently cause toxic fumes to be circulated out of the hood into the breathing atmosphere of the operator. Again, this recommendation is in the Spring Workshop notes. Mr. Dunlap will receive a copy of these notes.

Purchase specifications for all types of ventilation equipment should always specify the required minimum face velocity when the equipment is installed. If such information is not given the customer can expect to receive usually very much under-ventilated equipment. We are making a strong point of requesting such information to be written into the purchase specifications; otherwise, the supplier has many arguments for not supplying the amount of ventilation that is desirable.

Capacitor Cleaning

At the present time, trichloroethylene H-6305 is being used to clean capacitor tanks. Trichloroethylene is highly toxic and should not be breathed in concentrations that exceed a very definite odor, which can be detected by the average person somewhere between 150 and 200 ppm. The Maximum Acceptable Concentration for trichloroethylene vapors is 200 ppm and will, very likely, be reduced in value some time in the future. I am not certain whether methyl chloroform H-9865-2 would be equally satisfactory for this purpose, but it would be worth a try since its toxicity isn't as great as for trichloroethylene.

WIH 0954

This clearing operation should be performed where there is good local exhaust ventilation. But it appeared from my observation that the operator should be provided with a charcoal type of respirator listed on material card 7A2/10A or 1E.

Drying Ovens

Two drying ovens identified as (W) DA369 and (W) DA371 were used mainly for drying off parts. However, it is entirely possible that parts containing flammable solvents could be put into these ovens. All ovens should be provided with explosion relief latches. The oven doors for both of these ovens are so constructed that they are very securely latched when the doors are closed. These latches should be replaced with explosion relief types of latches.

Ventilation

The exhaust ventilation duct from the ventilation system in this room should extend up over the roof about 6 feet. At the present time, the end of the exhaust duct is opposite one of the windows. Many of the solvent vapors will re-enter the building in the summer time when the windows are open. Unless there is a very definite need for the use of weather caps on exhaust ventilation stacks such cans should not be used. However, where such caps are really necessary Fig. 1,2, or 3 in the attached drawing should be used. Again, this problem was discussed and recommendations made at the 1960 Spring Workshop Session.

Many loose "V" belts were noticed throughout the plant during the visit and this includes the belt driving the fan in this area. These belts need to be kept tight on both sides in order to prevent slippage and a resulting decrease in the efficiency of the system.

VENTILATION

It was noted that the whole building was under strong negative pressure. Such pressures are detrimental to the efficiency of local exhaust ventilation systems. It is my understanding that this condition is to be relieved some time during the summer, so that the building will be under slight positive pressure before winter weather occurs next fall.

As just indicated, many of the ventilation systems in the plant were varying in efficiency for several reasons. One of the common reasons was belt slippage. And again, it should be emphasized that fan belts should be adjusted periodically and kept tight.

All local exhaust ventilation ducts should extend at least 6 feet above the roof of the building in order to get proper air dilution, and most important to prevent toxic and flammable fumes and vapors from the systems from re-entering the building.

The Safety Supervisor was recently provided with a home made smoke gun supplied by the Industrial Hygiene Laboratory for periodic usage in determining the direction of air currents and an indication of the kind of ventilation provided

WIH 0955

in various local exhaust ventilation hoods. The smoke gun is to be used only as a qualitative instrument. It was highly recommended recently that your plant secure a Jr. Velometer for making face velocity measurements. Duct air velocity measurements cannot be made with this instrument. However, a Sr. Velometer with a number of attachments is available for many types of air measurements that are normally made. But the Jr. Velometer, which is very much less expensive, would be a great help for checking ventilation for spray booths, chemical hoods, local exhaust ventilation units, etc.

Attached are copies of ventilation survey forms for spray booths and chemical hoods. Surveys for spray booths and chemical hoods, as well as all other types of ventilation equipment, should be made periodically to be sure that adequate ventilation is provided. Records of these measurements should be kept on forms similar to these, both for maintenance purposes and also for potential litigation purposes to provide information that periodic inspections of ventilation equipment are routinely made.

Again, it should be emphasized that all purchase specifications should always indicate the minimum ventilation conditions for all purchased equipment. Face velocities, when such equipment is installed, are very important requirements and should be specified when the equipment is purchased and indicated in the purchase specification.

The lavilite and tar pots in Section D-30 need improved ventilation by reducing the area of the present local exhaust hood mouth and, at the same time, cause the fumes to move away from the operator into the hood as shown in Fig. 4 rather than up past his breathing zone. Toxic sulfur dioxide gas and fumes are presently very noticeable and should be removed to the outside of the building. These hood alterations are simple for making more effective ventilation by additions shown by the dotted line in Fig. 4 and by two side shields extending down to the top of the melting pot.

In Section D-31 a local exhaust hood should be placed on the fluxing operation.

Torit dust collectors should not be purchased in the future. Better and more effective unit dust collectors are available from the American Air Filter Co., Louisville, Kentucky.

The large downdraft spray booth, M&E Model F-3375, should be used as a downdraft spray booth as it was designed to be. This requires closing both doors on the sides of the booth, so all the air exhausted by the exhaust fans is drawn down past the spray painter and through the floor grills. A downward face velocity past the breathing zone of the operator should be at least 150 feet per minute. When either or both doors are open the effectiveness of the ventilation for the spray painter's protection is greatly reduced since the air velocity down past his breathing zone is reduced.

The exhaust stacks from this booth should extend about 6 ft. above the roof of the building. Many of the exhaust paint fumes under the present conditions will return to the building again when doors and windows are opened or when the wind has a tendency to blow the fumes into the building.

WIH 0996

The ventilation of this booth was not good. Upon further investigation expanded metal screens were found in the exhaust ducts, presumably to reduce the return of cold air into the building when the fans were not in operation. These screens should be removed from the ducts since they create a high resistance to airflow. In addition, the holes in the screens were partly closed with paint that is not removed by the water wash portion of the booth. Even dampers are not desirable in such ventilation ducts since they are closed frequently when the booth is in operation. In fact, dampers are illegal in some states for this reason.

Some of the "V" belts for driving the exhaust fans were slipping. These belts need to be kept tight throughout the length of the belt and not just on one side in order to prevent slippage.

The automatic spray booth (W) DM-90 near the zinc metallizing operation was poorly ventilated. The face velocity for air through the front of the booth should be at least 100 feet per minute (fpm). It was measured at 50 fpm. Large quantities of solvent and paint fumes were spilling out the exit side of the booth. Conditions were made worse by the paint spray "touch up" operation at this location. The paint fumes from the "touch up" operation should be exhausted to the outside of the building by an additional booth. The operator was wearing a worthless Hartindale respirator. Until ventilation can be provided for the "touch up" painting, the operator should be provided with a paint spray respirator listed on material card 7A210RA or HF. To wear an effective respirator for prolonged periods of time, especially during the warm weather, is very uncomfortable, so persons wear them ineffectively (if at all) under such conditions. Sufficient local exhaust ventilation should be provided so respirators are not needed. 100 fpm is satisfactory for an automatic spray booth, but 150 fpm is highly desirable for a manual spraying operation.

SOLVENTS

Small quantities of flammable solvents should be kept in recommended safety cans with flash back arrestors and listed on material card 7T210RA to DC.

All tanks containing flammable solvents, such as cleaning solvents, should have a workable metal hinged lid held open by a fire link as shown in Fig. 5. A dry chemical fire extinguisher should be attached to a nearby building column for emergency fire protection. Periodic closing of the lids should be done for assurance of possible closure in case of fire.
Solvents like gasoline, carbon disulfide, carbon tetrachloride and methyl alcohol are either or both highly toxic and highly flammable. These solvents should not be used since there are usually less hazardous solvents that can be used satisfactorily. I'll be glad to give suggestions where needed.

Attached is a motor cleaning specification P.S. 185320 that was composed by Materials Engineering motor insulation personnel, Industrial Hygiene and MMM representatives.

RADIATION

Film badges have been forwarded to measure x-ray radiation from rectifier tubes at two plant locations.

WIH 0957

PERSONAL PROTECTIVE EQUIPMENT

Eye protection—Recommended eye protection listed on the appropriate Westinghouse material cards should be provided. Material cards such as 5576, 5578, 5996, 8890, 8893, 13277, 7h2l09C, 7h2l0CK to CQ, 7h2l0CR to CY, 7h2l0Ch to CC, etc. should be consulted for a guide. Many of your present eye protection items are not recommended to be desirable.

It is preferable to issue spectacles from the Medical Department where a trained nurse will select the proper size spectacle and make the necessary adjustments for wearing comfort. Uncomfortable eye protection cannot be expected to be worn and workmen are not capable of making such adjustments. Even non-prescription spectacles should not be issued from the tool room.

Goggle cleaning fluid 1-0331-3 should be provided for dispensing from dispenser 1-12517-1 which will be a durable dispenser for the spectacle cleaning fluid as well as liquid soap. This dispenser has stainless steel working parts.

Along side the dispenser should be mounted a roll of toilet tissue free of abrasive material and equal in quality to Delsey. Most tissue scratches plastic eye protection surfaces.

Other recommended personal protective equipment such as gloves, aprons, welding helmets, face shields, respirators, gas masks, ear protection, hard hats, handcreams, etc. are listed on Westinghouse Material Cards as a result of extensive evaluation tests and incorporation of desirable properties by working with qualified suppliers to obtain several sources of supply. Each safety supervisor has been supplied with appropriate (W) material cards for many materials of special interest to them. Complete (W) material and purchase specification cards are available in the Purchasing Department. The Purchasing Department should be requested to purchase recommended materials in the interest of a good safety and industrial hygiene program and not be influenced by high pressure sales tactics that are sometimes used.

The safety supervisor should approve all items for a good safety and industrial hygiene program. The Headquarters Industrial Hygiene Laboratory will be glad and is interested to give information and assistance in these areas.

PLATING WORK

A small hood with a face velocity of 100 fpm should be provided for the chemist to protect him from toxic dusts, gases and vapors.

The window in the portable shield should not be window glass, but I'm not sure of its composition. Safety glass is preferable. Wire impregnated glass is not desirable either.

Containers for cyanide containing materials should be kept about 4 or 6 inches above the floor to prevent spillage of acids or acid containing solutions from contact with these containers.

All processing tanks should have appropriate labels on them for easy identification to workmen.

The hood over the "bright dip" tank in the automatic line should be made more

effective by extending the mouth of the hood downward by more side enclosure. Details were explained to Mr. Dunlap.

The chlorinated solvent degreaser inside the door is located in an undesirable location with respect to drafts, and is poorly constructed with respect to fundamental principles. It was indicated to be used only a short time and then will be scrapped, so further recommendations are not being made.

DEGREASER (W) BA-60 Section E-20

The coolant water for this degreaser, as I remember, does not go to waste but is recirculated water, and it appears that the flow is not as great as desirable to prevent the vapor level from rising up to the vapor level thermostat and shutting down the machine. This thermostat should always be operative to prevent the toxic solvent vapor rising above this level and spill over the tank walls.

The coolant water should enter the lower coil or portion of the solvent vapor water condenser to prevent fog formation as much as possible. See my 1960 Spring Workshop notes for details of a good water separator, proper flow diagram of coolant water through the vapor condenser along the side walls of the degreaser tank and proper exit water temperatures with a recommendation for this control.

WELDING BOOTH

Adjust ventilation to remove solder fumes from the operator's breathing zone for the conveyor operation.

Excessive ozone was detected in the helium welding booth for welding capacitor tanks and should be reduced by providing more air movement by a fan properly located.

Compressed gas cylinders should all be anchored with chain supports.

Neoprene or plastic coated gloves should be provided for applying solder flux with a brush to capacitors. A metal shield should be placed between the bench grinder and the soldering operation to permit the local exhaust ventilation system to remove the soldering fumes from the breathing zone of the operator more effectively.

SECTION E-21

The brazing operation using flux #752-7 outside the winding room needs local exhaust ventilation to remove the toxic and irritating fumes from the breathing zone of the operator. The operator needs neoprene or plastic coated glove protection to protect his skin. This person developed a very severe skin irritation that could have resulted from contact with the flux. Several other hoods along the outside of the winding room wall need further enclosure and more effective ventilation. These changes were reviewed with Mr. Dunlap.

THE METALLIZING OPERATION

This operation is over ventilated. The air velocity past the man toward the

WIH 0959

water curtain of the Rotoclone booth indicated 800+ fpm. This air velocity should be reduced to about 400 fpm to conserve air and to reduce the excess air draft over the operator. These persons need to wear adequately fitting ear plugs which should be fitted by the nurse at the Medical Department. These persons should have had preplacement audiograms. If they were not examined previously, they should be checked every 6 months. Unless these persons wear the earplugs fitting tightly in the ear canal protection is not provided even though the plugs are placed in their ears.

BLOCK ROOM

The zinc spraying operators should have pre-placement and periodic audiometric examinations. It appears the noise from the metal spraying operation can be further reduced by placing an acoustic tunnel on the side of the equipment with the opening toward the wall and away from personnel. The acoustic lined tunnel would be just large enough to place the part in position to be metal coated by reaching in and out with the left hand. At the present time, an intense noise level is emitted directly from the torch toward the operation through an opening in front of him. Even though the operation may have fair protection by wearing ear plugs effectively, the present noise levels may be harmful to surrounding workmen who are not wearing ear plugs. It would be more practical to prevent the present high noise intensity from escaping. Even a tunnel 6" long and properly located and lined with 2" of rock wool held in place by 1/4" hardware cloth would be very effective.

The persons dumping clay into mixers should be required to wear dust respirators when dust is being produced. A Dustfoe respirator H-7424OOT should be used. These persons should have had pre-placement chest x-rays and periodic chest x-rays every two years afterwards.

High noise levels from axle friction, etc. from the mixers should be eliminated by lubrication.

NOISE

The rather widely accepted maximum noise levels for preventing permanent partial loss of hearing is 85 decibels in the speech range from 300-2400 cycles per second for continuous noise. A criteria for impact noise has not as yet been determined.

When purchasing new equipment thought should be given to the potential noise hazard as well and have the supplier provide equipment that does not cause a noise hazard.

Present noisy operations should be altered, if possible, for reducing the noise hazard. We will be glad to make additional suggestions since this laboratory is promoting the reduction of noise hazards throughout the corporation.

The exhaust air from punch presses is making a very distractive and excessive noise. This noise problem can be easily solved by using an Atenuffler on the air exhaust. Attached is descriptive literature, engineering data, etc., for controlling such a noise source.

WIH 0960

MSA ear plugs (W) M-7815DJ, which are available in five sizes, should be provided and fitted by the Medical Department. Before the employee leaves Medical he should demonstrate to the nurse that he can effectively place the plugs into his ear canals by reaching over his head with one hand and pulling the external ear up and back to make the canal straight for properly inserting the plug. Learning to wear earplugs is like learning to wear safety spectacles. Persons need to be instructed to wear them an hour or two the first day and gradually increase the wearing period so that at the end of a week they can rather comfortably wear them a whole day. It is always much more desirable to prevent or shield noise sources than to require earplugs to be worn. Properly fitting earplugs are usually as effective as the much more expensive ear muffs for most applications.

MISCELLANEOUS

Absorbents

The Industrial Hygiene Laboratory has done extensive evaluation and testing of various kinds of oil and water absorbents during the last number of years. In addition to the laboratory tests several practical plant tests have been made to substantiate these recommendations. In general, there are two types of nonflammable oil and water absorbents. One of these materials is commonly known as Fuller's earth and the other as diatomaceous earth. Our tests have indicated that the diatomaceous earth materials are far superior to the Fuller's earth materials. Even though the diatomaceous earth materials cost more per ton, the duration of their life is considerably longer. The material is lighter in color and, therefore, reflects more light making the illumination better. At the present time, there is only one recommended material which is listed on material card 8675. It was noted that saw dust was being used to absorb oil spills. Saw dust should not be used for such purposes since it is a poor absorber, it creates a slip hazard and most important is the fact that it is a definite fire hazard.

Maintenance Materials

Westinghouse material cards 2792-5, 2792-9 and 2792-6 carry recommendations for heavy and light duty powdered soaps that are highly recommended for use in the washrooms, and a specially compounded liquid soap for use in some office lavatories. Liquid soap should never be provided in shop lavatories, since it is not a good skin cleaning agent for dirty hands. The powdered hand soaps contain specific ingredients for increasing the mechanical cleaning ability of these materials. I believe that recommended materials have been used in most of your lavatories, but this additional information is given for more background.

Westinghouse material card 4275 lists a desirable floor coating material for asphalt tile floorings. Again, the Industrial Hygiene Laboratory has done extensive work in this area and, so far, only one material has been recommended, but several other materials are being developed for this purpose.

Recommended soap dispensers are listed on material card 12517.

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Over a 5-year period extensive studies were made for a desirable cleaning material for urinals, commodes, wash bowls, etc., in lavatories. The result of this development is a strong recommendation for a material known as SBS-50 which is a powdered material, rather than a liquid, containing several percent of active ingredients. Water is very cheap in your plant so that it is much more economical to purchase powdered material with desirable characteristics and use with water as directed in the attached maintenance procedure. Many of the plants have very successfully used this material for such purposes.

Compressed Gases

All compressed gas cylinders should be secured with chains. These chains should be mounted at a height of about a half to three-fourths the length of the cylinder above the floor. Compressed gas cylinders should be purchased with outlet valves meeting recommendations on page 9 and 10 of American Standards Association Code B57.1-57, and they should be labeled in accordance to ASA Code Z48.1. We have indicated on Westinghouse material cards for most compressed gases the required information that should be indicated on the purchase specification for these compressed gases.

All compressed gas gauges should be identified with either Factory Mutual Insurance Co. or Underwriters' Laboratory approval stamps on each of the gauges. In general, compressed gas gauges are designed for different kinds of gases and should not be used interchangeably.

If there are any questions or comments concerning these recommendations I will very greatly appreciate knowing about them. We are very anxious to work closely with you on all types of industrial hygiene problems.

As these recommendations are considered, and it is hoped that most of them will be used, I will again greatly appreciate being informed as to the progress as these improvement occur.

Hoped !

H. Wilbur Spalcher, Administrator
Industrial Hygiene

P.S. All the literature and ventilation designs are attached to Mr. Dunlap's carbon copy of this report.

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