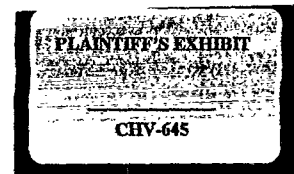


Memorandum



July 5, 1985

OSHA HAZARD COMMUNICATION PROGRAM EL PASO REFINERY

MR. C. R. PATAKY

This memorandum summarizes the status of your OSHA Hazard Communication Program subsequent to my two-day work session with you and your "team." As expected, your refinery is in good shape for timely compliance. Many of the resources required are already in place. Furthermore, included in Attachment I is the "plan" we developed as a team for completing any remaining work. This status is largely the result of the prior development (by your facility) of effective resources and the strong support you gave this program during my visit.

Especially impressive among your existing resources are Refinery Instructions 1118 and 1409. The former assures that proper MSDS's are provided your workers before a chemical is used. The latter assures that both Operators and Maintenance workers are protected from the hazards associated with non-routine tasks (in this case shutdowns).

Thanks to all the input and support ^{from} for you and your team, we developed "a plan custom-made for El Paso." Please revise this plan as necessary and by no means rely solely on it.

Hopefully, you found some of the ideas and resources I brought useful. We (CUSA IH and I) will provide any additional on-site assistance you need to complete your program (a project schedule is attached).

Finally, I thank Jim Keating, you and your team for your support and hospitality, both of which made my stay enjoyable. I have attached a personnel directory for your use, please call us anytime with your welcome comments and questions.

A.J. Maciey / erp
ANTHONY MACIEY

Attachments (3)

cc: Mr. D. L. Henderson
Ms. B. Lazarus
Mr. H. J. McDermott
Mr. A. J. Maciey
Mr. J. C. Keating

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SUMMARIES

I. We completed the following work:

1. Made a presentation to Jim Keating and the Refinery Management regarding the requirements and compliance timing of the standard. At this presentation, Mr. Keating approved the implementation of the CUSA - Manufacturing Strategy (specifically, the "coordinated-team approach").
2. Conducted a tour of your facility (including a general drive-through, a walk-through of the Crude Unit Control House/Plant Area, and a visit to your truck and tank car loading facilities) to identify those existing resources which already communicate the required information.
3. Conducted approximately seven (7) hours of "brainstorming" and training as a "team".
4. Held discussions with Jim Carson and Daryl Hagler regarding what labelling and paperwork is presently involved with truck or tank car shipments out of the refinery.

II. Through "team" and various "one-on-one" discussions, we determined that:

A. Shipped Materials

1. Company MSDS's are not routinely sent to customers from here and customer requests for them are rare. The refinery does not wish to take on any of this responsibility.
2. Container labelling (only bulk containers are filled here, although not all materials shipped are "products") is limited as follows:

DRUMS - products are not loaded into drums here, although catalysts and various wastes may at times go out in drums. Certain shipments of drummed materials will need to be addressed.

TRUCKS - many materials/products are shipped by truck (not including Marketing's operations) including fuel oil, asphalt, sulphur, spent acids and caustics, and MEA/DEA - typically, all trucks are placarded per D.O.T. requirements and are given a bill of lading of some kind.

TANK CARS - the same products that move by truck move by rail car with a few exceptions including sulphur and MEA/DEA. Rail cars are placarded with D.O.T. placards (only diesel shipments are labelled with an additional manila card).

B. MSDS's (Intra-Refinery Distribution)

1. The Safety Group has developed an excellent system for providing the required MSDS's in the many work areas. Leroy Lehman administers this

program. Our review of the field books (the system includes one Master Book of approximately 2,500 Company and 900 Vendor MSDS's and 20 field books which are identical and which contain approximately 1100 MSDS's) found the books well maintained. Workers indicated they use and appreciate having the books.

2. The refinery has an outstanding written policy (RI-1118) that describes your MSDS distribution system. The instruction is most thorough and detailed. This instruction clearly designates the responsibilities and procedures involved and includes a Chemical Inventory Approval Sheet to assure that adequate information is obtained on hazardous chemicals before they are purchased.
3. Purchasing assists in obtaining vendor MSDS's. They will consider sending form letters to suppliers requesting that when data sheets are requested by the El Paso Refinery, the sheets (a) must meet OSHA's requirements and, (b) are to be mailed to the name and address listed on the form letter. Use of such letters should minimize the amount of time spent "finding" MSDS's mailed to various addresses the supplier might have.

C. Chemical Inventory

1. The refinery has completed an initial inventory and has even been accessing the data base to generate various output reports (e.g. indexes). There is agreement here to review the inventory and update it so that it can serve as the required index of which chemicals are present in which work area(s).
2. Subsequent to my visit, Rich Holen contacted me and explained that he is familiar with accessing and using the Chemical Inventory. Rich volunteered to provide any reports the team may need.

D. In-House Chemicals (mostly intermediates)

1. There are many resources in use which already effectively communicate the hazards of the various chemicals present in the work areas. These resources include: color-coded deck markings within which special protective clothing is required, signs warning of special hazards present, and safety policies and procedures. To a large extent, these resources satisfy the requirements that we provide "appropriate hazard warnings."
2. There is an existing practice for labelling samples sent to the QC Lab with "appropriate hazard warnings." It is not clear just how extensive and formal this program is, but it will at least provide a starting point for meeting the requirement that we communicate information to laboratory workers.
3. The suggested method of grouping (and then listing on paper) the many in-house (mostly intermediates) streams appear to offer many

advantages and simplifications here. Using this approach minimizes the amount of stencilling of hazard information otherwise required on the many vessels, exchangers and tanks, etc. If many tanks are associated with a given work area, it may be easier to list the "appropriate hazard warnings" associated with each material (rather than with each tank) on the same list discussed above. Even though an MSDS may exist for a material in a tank (and therefore, the material would be listed in the Chemical Inventory) if appropriate, the tank must be labelled with warning statements. Granted, if a hazard is significant and acute, it is appropriate that a warning statement be made on or about the tank. In these cases, it would be a surprise if some warning system was not already in effect. However, the suggested list or table of in-house chemicals' information may also be a good place to summarize certain chronic hazards/warnings associated with materials present in several tanks.

E. Training

1. Much of your on-going training, including that on RI-9900 and on how to read a MSDS, will satisfy many of the requirements as well as provide an excellent starting point.
2. The development and current use of RI-1409 is excellent. This resource will satisfy most, if not all, of the requirements that we communicate the hazards associated with non-routine tasks (in this case shutdowns) to workers.

To briefly summarize this program, before any major shutdown, your Safety Group puts together a brochure containing RI-1409 and any related MSDS's. By following the instructions in the Refinery Instruction, and by completing the checklist it contains, management assures that all workers are provided necessary hazard information on any (and all) chemicals present. The checklist then serves as documentation of responsibilities.

3. Your facility has the capability to utilize the many video tapes (existing and pending) which will meet many of the training requirements.

III. As a team, we developed the following plan, which will complete your program by the two effective dates (see schedule attached).

MANUFACTURER/SUPPLIER PROVISIONS (November 25, 1985)

A. Shipped Materials

1. I will see to it that other Company organizations (including Marketing, S&D and Product Engineering) provide revised Company MSDS's to your customers whenever those organizations arrange the transaction. Furthermore, it will be their responsibility to provide our customers with any additional label information, even if in the form of bills of lading or other paperwork.

2. Marise and Leroy agreed to generate two lists for team review. One will be a list of those materials shipped (not necessarily products) from here that have no Company MIB/MSDS. The second list will be those shipped materials for which the refinery alone is involved with the shipment/transaction and therefore cannot depend on other organizations as in #1 above.
3. Based on the findings from #2 above, I will assist you in developing or locating required MSDS's (or equivalent) and in providing appropriate hazard warnings on the shipping containers.

B. MSDS Distribution (Intra-Refinery)

1. Purchasing will make you a recommendation for effective use of form letters to assist your Safety Group in obtaining required vendor MSDS's.
2. After this "plan" is further along (say, approximately September 1985) your Safety Group should review RI-1118 and make any beneficial "fine-tunings" reflecting decisions and policies made for this program.

C. Chemical Inventory

1. We agreed to use the Chemical Inventory to provide indexes or lists of which chemicals are present in each work area. To do this, Leroy has agreed to "group" the 55 inventoried work locations (this number may change once Leroy reviews the work location names) into one of the 20 MSDS field (or "partial") sets.
2. As noted previously, Rich Holen has volunteered to generate these indexes. Leroy and Rich have agreed to work with Belle Lazarus (CTN 894-5949) of CUSA IH, to complete this grouping in the next couple of weeks. Once "grouped", Belle will reprogram your Chemical Inventory so that it groups the work locations into 20 groups. She will then provide an output inventory best suited for your updating. The goal is to complete your final inventory and submit to Belle by approximately September 1, 1985.

EMPLOYER PROVISIONS (May 25, 1985)

D. In-House Chemicals

1. Marise has agreed to coordinate among Process Engineering, Maintenance and Operations (especially) the development of "in-house lists" for each work area. It is suggested that Marise choose two areas and address them by approximately September 1, 1985. Then send this information to me for review (once you have approved it). I will then review it and return with my comments ready to assist in the final groupings of your areas. It is important that we not go beyond the two-area test case, since we want some consistency among the 12 refineries and my direct input will be necessary.

2. Based upon the groupings from #1, I will work with your Safety Group to make a file search for related MSDS information. At this time, Marise will be asked to gather any useful composition data on the various streams and intermediates that fall into a given category. At present, we have not finalized recommendations as to how to best make this MSDS information (especially the composition data) "available in the work areas."
3. Also, based upon the chemical groups in each area, I will assist your Safety Group in deciding on the "appropriate hazard warnings" for label purposes. A tour of each area would then be needed to identify any instances where the warnings are not being adequately provided. Of course, in these cases, the missing warning statements must be stencilled on the containers or on nearby signs or somehow provided in standards, procedures, or on the in-house list. Recall that I have provided more detailed guidance on how to meet these requirements.
4. By March 1, 1986, I will supply any proposed generic Health Data Sheets applicable to your broad chemical groups.

E. Training

1. We discussed the requirements versus suggested resources as follows:

General

- a. On the existence/requirements of the standard (CUSA IH will provide a video by November 1985).
- b. On how to read an MSDS (a video on "MIB's" now exists which is being slightly modified, a video on "toxicology" will be available approximately November 1985, and a brochure on how to read/use an MSDS is expected to be ready by approximately September 1985).
- c. On how we protect workers from the special hazards associated with unlabelled piping and non-routine tasks like shutdowns, etc. (many of your existing resources including training on RI-9900 and RI-1409 will apply).
- d. On how we protect Maintenance workers, including contractors, from the hazards encountered in the refinery (again, many useful resources exist and should be applied here - especially RI-9900 and RI-1409).

Work Area Specific

- e. On those chemicals present in each specific area (the Chemical Inventory can provide these lists - also refer to the "in-house lists").

- f. On the signs of exposure to those chemicals from e. (review of typical MSDS information and providing MSDS's or equivalent will be sufficient).
 - g. On how to use the information that the standard requires be available (site-specific safety meetings using the actual field information are the recommended method for accomplishing this training).
- 2. Your Safety Group, with input from the team and from any appropriate training experts, should develop a detailed training plan for approval by management. CUSA IH can provide additional guidance and resources upon request.

F. Written Program

- 1. By November 1985, I will provide a model outline showing the suggested wording and format for the "Outline of Compliance." It is suggested that at least a consolidated version of this outline be inserted into the field books and included in the specific training programs.
- 2. The formal written program should include, at least:
 - a. A master list of chemicals (i.e., Chemical Inventory plus the "in-house" lists)
 - b. Our hazard evaluation procedures (by CEHC)
 - c. The "Outline of Compliance" (i.e., how this facility complies with each provision of the standard).

CUSA MANUFACTURING
OSHA HAZARD COMMUNICATION STANDARD
PERSONNEL DIRECTORY

CUSA INDUSTRIAL HYGIENE (36TH FLOOR, 525 MARKET STREET, SAN FRANCISCO)

(Call for assistance in this order)

A. J. (Anthony) Macey	894-5973	CUSA - Mfg. Coordinator
H. J. (Hank) McDermott	894-3421	Senior Industrial Hygienist
E. M. (Eleanor) Lamperez	894-2966	Chemical Inventory Technician
B. F. (Belle) Lazarus	894-5949	Analyst - Toxics Control
A. M. (Andrina) Meier	894-3144	Specialist - Occupational Health
S. L. (Stan) Dryden	894-6912	Manager - CUSA Industrial Hygiene

CUSA-MFG SCHEDULE

1985							1986							
APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	
1							2							3
KEY DATES - SEE CODE BELOW														
TRAIN TEAMS							FOLLOWUP ON VENDOR MSDS'S							
ASSEMBLE INFO - SHIPPED MAT'LS							I M P L E- M E N T							
UPDATE CHEMICAL INVENTORY							INPUT							
PROPOSE MSDS DISTRIBUTION SYSTEMS							DEVELOP MSDS DISTRIBUTION SYSTEMS							
LIST IN-HOUSE CHEMICALS. PROPOSE LABELS/MSDS INFO.							GROUP IN-HOUSE CHEMICALS. ASSEMBLE IN-HOUSE MSDS INFO. COMPLETE IN-HOUSE LABELS.							
IDENTIFY EXISTING TRAINING RESOURCES. DEVELOP TRAINING PLAN AND OUTLINE OF WRITTEN PROGRAM.							COMPLETE GENERIC TRAINING (VIDEOS AVAILABLE)							
COMPLETE FIELD BOOKS/ FIELD TRAINING														

CODE OF KEY DATES

1. COMPOSITION INFO TO CEHC: 7/1/85

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ATTACHMENT 1

CURRENT INDUSTRIAL HYGIENE RECOMMENDATIONS
EL PASO REFINERY

Each recommendation has been categorized into one of three groups on the basis of relative significance, as indicated below:

- (A) Regulatory requirement
- (B) Potential health hazard or Company policy requirement
- (C) Good industrial hygiene practice

GENERAL

Refinery Stocks and Streams

- (B) Use engineering controls, when feasible, or appropriate respiratory protection to reduce employee inhalation exposures to Refinery streams, if exposures exceed applicable American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), or other exposure limits.
- (B) Use impervious gloves to control employee exposure to Refinery streams through skin contact and additional protective work clothing when extensive whole body exposure is likely.
- (B) Ensure that employees are using good personal hygiene to wash oils off skin surfaces if exposure to Refinery streams occurs and to replace oil saturated work clothing as soon as practical. Clean oily work tools before reuse.
- (B) In response to the upcoming Federal OSHA Hazard Communication Standard, ensure that all Refinery stocks and intermediates presenting some potential for worker exposure have been incorporated within the El Paso chemical inventory.

GENERAL

Hydrogen Sulfide Hazards

- (B) Survey and note locations of streams containing potentially-high levels of H_2S which are routinely tested using detector tubes, such as the lines from C1909 at the FCC and from D3906 at the Hydrofiner. Implement appropriate measures to control potential high-level H_2S releases within the operator breathing zone during such testing, such as the use of a flexible gas-tight in-line septum (to accommodate the detector tube) and remote downstream venting of the line's contents. Representative drawings or illustrations of suggested designs will be forwarded shortly.
- (b) Establish and communicate in writing a policy that prevents the use of lead acetate paper either as personal H_2S monitors or as the only means of monitoring employee exposure to H_2S .
- (B) Broaden the use of solid state personal H_2S monitor/alarm units among employees who are performing tasks in areas where there is a potential for elevated H_2S levels, such as water drawing from tankage containing sour stocks.
- (B) Reposition (extend beyond the worker breathing zone) vent lines which must be non-routinely opened during process upsets and which are likely to contain potentially high levels of H_2S . Representative work operations where such H_2S hazards may exist include venting of light hydrocarbons from lines at the accumulator pots in the older crude unit area, and checking for hydrocarbons when draining foul water from C3901 at the Hydrofiner.

GENERAL

Asbestos Hazards

(A) Monitor worker exposure to airborne asbestos during the handling of asbestos-containing insulation and other operations likely to result in the release of asbestos fibers, such as the use of electric shears when cutting service sheet packing material at the Storehouse. Include Chevron and contractor employees in the monitoring program in order to evaluate exposure levels during selected operations. Include Chevron employees working adjacent to suspect operations if there is a likelihood of downwind exposures.

(A) Develop a medical surveillance program for Chevron employees if their exposure to asbestos during normal work activities is 0.1 fibers/cc or greater as an 8-hour time-weighted-average. Federal OSHA Asbestos Regulation 29 CFR 1910.1001 (j) describes the recommended program criteria. The level of 0.1 fibers/cc is taken from the Cal-OSHA Asbestos Regulation under California's approved state plan.

(B) Eliminate existing supplies and usage of 100% asbestos rope packing materials and other friable asbestos products where feasible. If substitutes for selected specialty asbestos products are unavailable, ensure that such friable items are properly stored on Storehouse shelves within labelled plastic bags to prevent the dispersal of asbestos fibers during handling.

Inorganic Arsenic Hazards

(A) Monitor worker breathing zone levels of inorganic arsenic during future work activities which may result in the release of such compounds, such as Alkylation Plant shutdowns, spent acid storage tank maintenance, or Quality Control Laboratory handling of inorganic arsenic compounds. Based upon the results of such representative monitoring,

GENERAL

Inorganic Arsenic Hazards

Implement a program to comply with applicable provisions of the Federal OSHA inorganic arsenic regulation, 29 CFR 1910.1018. Note that many of the standard's requirements are triggered by measured airborne concentrations in excess of a predetermined action level. Training is required whenever there is a possibility of worker skin or eye irritation from inorganic arsenic. Containers of inorganic arsenic compounds within the Quality Control Laboratory must be labelled in accordance with the regulation.

Safety Showers and Emergency Eyewash Fountains

- (B) Replace all of the Refinery's wall-mounted portable eyewash bottles with conventional hard-piped fountains or larger portable units which have adequate water reserves to ensure 15 minutes minimum flushing capabilities, per Safety in Designs Sections 10.03 and 10.04.
- (A) Install a permanent safety shower/eyewash unit within the Northeast end of the South Alkylation Plant Area, and an eyewash within the Alkylation Plant Lab Shack.

Chemical Additives Handling

- (A) Implement mandatory chemical goggle usage and provide appropriate chemical hazard identification (yellow lining or equivalent) at all Refinery sites where Betz Krom-trol formulations are dispensed. Utilize respiratory protection approved for toxic dusts/mists if there is a likelihood of significant dusting of dried Krom-trol residues or aerosolization of liquids during handling.
- (A) Implement mandatory chemical goggle usage and provide appropriate chemical hazard identification at the Dry Dye Building (due to antioxidant handling) and any other

GENERAL

Chemical Additives Handling

identifiable Refinery locations where chemicals capable of causing irreversible eye damage are being handled, based upon a review of manufacturer recommendations, MSDSs and other available product information.

- (B) Investigate and, if feasible, substitute slimicides which are free of dimethylformamide (DMF) in lieu of existing Betz C-30 and DE-364 formulations. If acceptable DMF-free slimicides are not available, adopt the DMF handling precautions and protective measures outlined in Chevron MIB #1426, ensuring that such DMF-related health hazard information is available to all workers in areas where the subject slimicides continue to be handled. One suggested approach includes maintaining copies of MIB #1426 (with an appropriate notation) alongside existing Betz MSDSs for those formulations within the Refinery. Monitor airborne levels of DMF during slimicide dispensing activities at locations not already outfitted with closed metering/injection facilities; and during maintenance activities on such equipment in slimicide service.

Catalyst Handling

- (B) Utilize engineering controls and appropriate work practices such as wet dumping during future (non-FCC) catalyst handling activities, in order to minimize potential worker exposures to airborne dusts. Such measures are recommended in preference to the exclusive use of personal protective equipment.

Inorganic Lead

- (A) Comply with all applicable provisions of the Federal OSHA Inorganic Lead Standard (29 CFR 1910.1025) during work

GENERAL

Inorganic Lead

activities likely to result in the release of airborne inorganic lead or during which the possibility of worker skin or eye irritation exists. Initial requirements include education and training of affected workers plus measurement of airborne lead levels. Potential work activities covered by the regulation would include abrasive blasting and hot work on surfaces previously coated with lead-based compounds, work at sites formerly used to weather alkyl lead wastes into inorganic lead compounds, and batching of lead acetate solutions within the Quality Control Laboratory.

AREA 1

Stocks and Racks

- (B) Install a warning sign at the 6th Street alkyl lead pipeway overpass, identifying the extremely toxic contents of the line.

Asphalt Plant

- (B) Upgrade the performance of the asphalt laboratory distillation fume hoods in order to maintain minimum average face velocities of 100 fpm within each hood, with each sash in its normal operating position. See Safety in Designs Section 11.03 for complete hood specifications. As a first step, the integrity of the existing system including the direction of rotation of the fan should be checked. If the fan is shown to be in good condition and rotating correctly, other measures such as an increase in fan speed may prove worthwhile.

AREA 1

Landfarming Operations

- (B) During representative dry soil periods, semi-annually monitor tractor operator breathing zone levels of total dusts and any predominant toxic metal components suspected to be present.

AREA 2

SRU and TGU

- (B) Monitor worker breathing zone levels of SO₂ (using detector tubes) during routine sulfur seal rodding-out activities, in order to assess short-term worker exposures.
- (B) Revise page 8 of Operating Standard P-2010 (formerly P-7200) to more accurately reflect the recognized toxicity of vanadium compounds. The following passage briefly describes the toxic properties of vanadium:

According to the scientific literature, vanadium is unquestionably poisonous to man in all but very small amounts, no matter how it is administered. The pentavalent compounds such as V₂O₅ and vanadates are considered more toxic than other forms. When inhaled, the chief effects of vanadium pentoxide are on the respiratory passages, with marked irritation of the eyes, nose, throat, bronchi, and lungs. Acute and chronic bronchial and lung damage can result. Dermatitis may result from excessive skin contact.

AREA 2

SRU and TGU

(B) Modify Channel 25 of the General Monitors fixed H₂S alarm system at the SRU/TGU Control House or otherwise expand the display capabilities of the system to more promptly/clearly indicate which of four sensing locations triggered the alarm.

(B) Monitor operator breathing zone H₂S concentrations while drawing D5950 overhead reflux samples. If such short-term H₂S levels approach the Federal OSHA ceiling limit of 50 ppm, install enclosed sample draw facilities vented remote from the operator breathing zone or equivalent measures in order to minimize worker exposure.

AREA 3

Rheniformer and Isomerization Plants

(B) Investigate and if feasible, substitute less-toxic chloriding agents (such as propylene dichloride) in lieu of existing ethylene dichloride (EDC) at the Rheniformer and Isomerization Plants. Alternatively, implement engineering and work practice controls to minimize the release of EDC vapors during such dedrugging/injection operations, ensuring that any venting occurs well away from the worker breathing zone.

FCC Unit

(B) Investigate alternate precipitator drop tube/dumpster equipment configurations or appropriate engineering controls to minimize the release of airborne catalyst fines during handling.

(B) Until any such modifications can be completed, ensure that workers involved in catalyst fines handling and any other

AREA 3

FCC Unit

workers immediately downwind of such activities wear respiratory protection approved for toxic dusts when visible dust releases are occurring.

QUALITY CONTROL LABORATORY

- (B) Complete designs engineering efforts to upgrade face velocities of fume hoods within the Solutions and Chemical-Physical Sections, to achieve flowrates specified in Safety in Designs Section 11.03.
- (B) Upgrade the Octane Laboratory fume hood such that a minimum average face velocity of 125 fpm is maintained across the hood face with the sash fully opened, per Ethyl Corporation recommendations.
- (B) Review the current inventory of chemicals (stored within the laboratories and basement areas) which are no longer in current use. Dispose of those chemicals which may pose a health hazard or which require specific measures to comply with appropriate regulations.

MAINTENANCE

Abrasive Blasting

- (B) Utilize only abrasive blasting materials containing less than 1% free crystalline silica during all dry unconfined abrasive blasting operations.
- (A) Comply with all applicable Federal OSHA regulations regarding abrasive blasting and respiratory protection during such work. Within abrasive blasting hoods, utilize only contaminant-free air from appropriately-positioned fresh air blowers or compressed breathing air, all meeting Grade D Commodity Specifications of the Compressed Gas Association.

MAINTENANCE

Welding Shop

- (B) Install local exhaust ventilation equipment to control airborne contaminants generated during welding, cutting, and brazing activities within the shop. Any such ventilation devices should be usable at all possible points of contaminant release. See Safety in Designs Section 11.01 for representative system specifications. Until such a system is in place, we recommend the use of respiratory protection equipment approved for toxic dusts, mists, and fumes during all such work.

Machine Shop

- (B) Modify the exhaust hood behind the metal spray lathe bed to conform with the design shown in Attachment 2, minimizing overspray and improving its capture efficiency.
- (B) Seal visible air leaks in the metal spray hood exhaust system's horizontal ductwork between the Clarage fan and the shop's north wall to minimize contaminant re-entry into the workplace.
- (A) Due to noise levels generated by the metal spraying apparatus, comply with all applicable provisions of the Federal OSHA Hearing Conservation Amendment during such work. Implement appropriate measures to ensure that hearing protection is worn by the metal spray operator and any nearby personnel whose noise exposures may exceed designated limits.
- (B) In conjunction with the above, consider the use of sound-isolating partitions or enclosures at the metal spray lathe to minimize the need for hearing protection in adjacent work areas.

MAINTENANCE

Instrument Shop

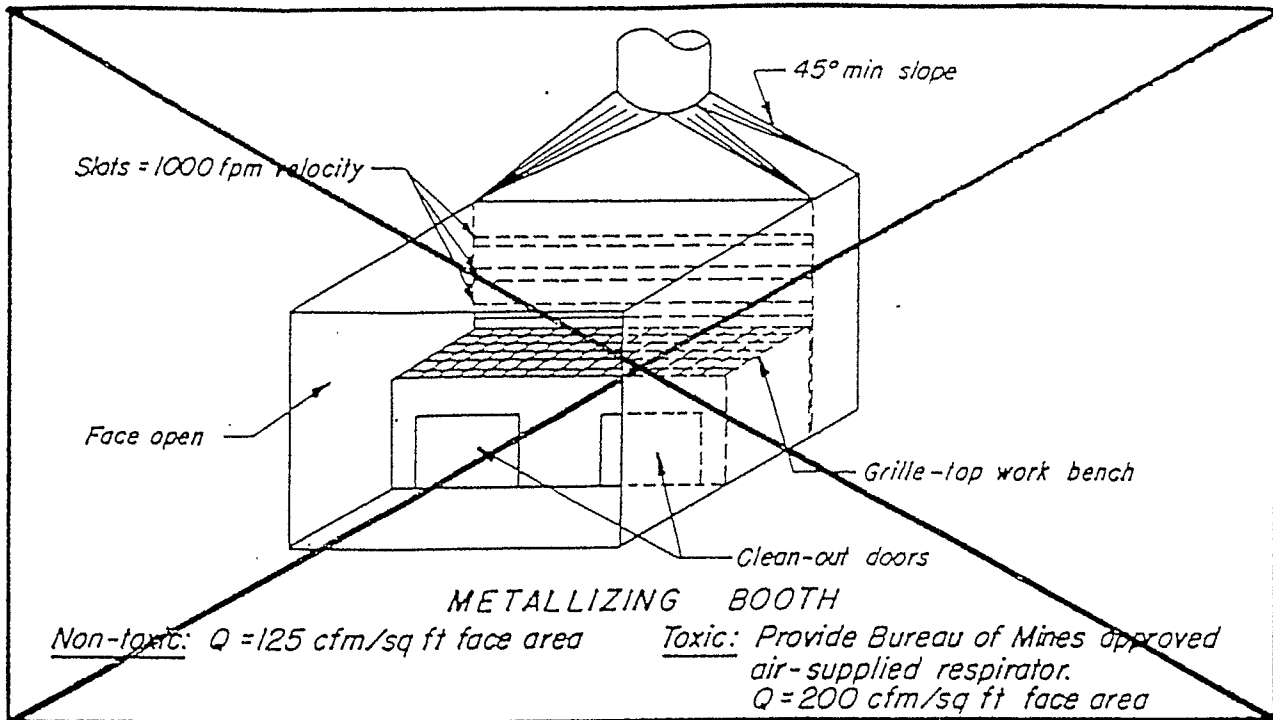
- (B) Reduce existing mercury contamination within floor-level cracks and crevices through the use of an appropriate mercury vapor depressant compound such as HgX, available from Acton Associates, 100 Thompson Street, Pittston, PA 18640. Maintain a supply of such compound in the shop for use in the event of future spillage. Store bulk mercury within closed containers.

Old Tool Room Area

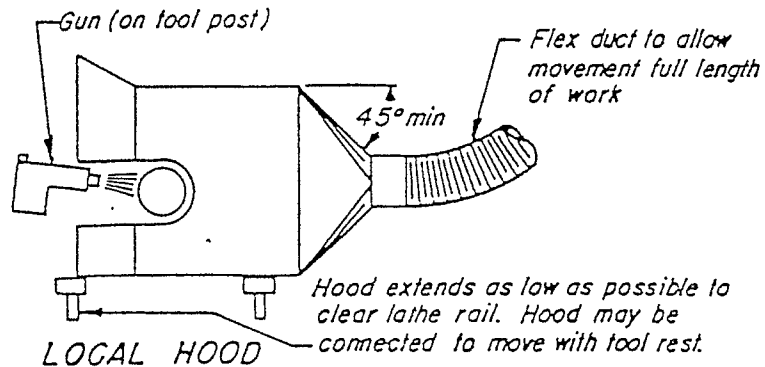
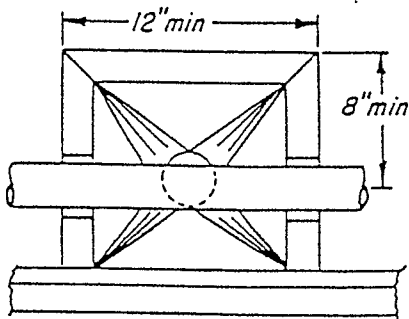
- (B) Provide labels (containing all identifiers and necessary precautionary statements concerning proper handling, storage, and first aid which may have appeared on original packaging) on all containers now dispensing detergents, degreasers, solvents, and oils used in equipment cleaning.

(Excerpted from ACGIH Industrial Ventilation, 17th edition)

5-55



Duct velocity = 3000 fpm minimum
 Entry loss = $1.78 \text{ slot VP} + 0.25 \text{ duct VP}$
 Small lathe, etc., may be mounted in booth



LOCAL HOOD

Note: Local hood not satisfactory for spraying toxic metals.

$Q = 200 \text{ cfm/sq ft face openings}$
 Duct velocity = 3500 fpm minimum
 Entry loss = 0.25 VP

AMERICAN CONFERENCE OF
 GOVERNMENTAL INDUSTRIAL HYGIENISTS

METAL SPRAYING

DATE 1-64

VS-4/5

SUMMARY OF RECOMMENDED
AIR MONITORING ACTIVITIES

Recommendations for future air monitoring appearing in this report have been summarized below. All samples are to be collected within the breathing zone of individuals performing the specified activities at the frequencies shown. Initial and followup air monitoring requirements for asbestos, inorganic arsenic, and inorganic lead are specifically outlined in the cited Federal OSHA regulations. Full details of appropriate sampling methods and any necessary equipment loans can be obtained from Mr. R. J. Reinhart, Corporation Industrial Hygiene, at CTN 894-6930.

<u>Activity to be Sampled</u>	<u>Contaminant</u>	<u>Frequency</u>
Any work which may release airborne asbestos fibers	Asbestos	Described in 29 CFR 1910.1001(f)
Any work which may generate airborne inorganic arsenic	Inorganic Arsenic	Described in 29 CFR 1910.1018(e)
Open-air dispensing of Betz C-30, DE-364, or maintenance (teardown) of injection system equipment handling same	Dimethylformamide	At least 3 separate occasions, to quantify exposure levels
Any work which may release airborne inorganic lead	Inorganic Lead	Described in 29 CFR 1910.25(d)
Rodding-out sulfur seals	SO ₂	At least 3 separate occasions, to quantify exposure levels
Landfarming work likely to generate airborne dusts	Total dusts and specific metals suspected to be present	Semi-annually
Drawing D5950 overhead reflux samples	H ₂ S	At least 3 separate occasions, to quantify exposure levels

DATE _____

ATTACHMENT 4

QUARTER SUMMARY OF MONITORING RESULTS
EL PASO REFINERY

<u>Location/Operation/Job Title</u>	<u>Contaminant Monitored</u>	<u>Date Monitored</u>	<u>Results (Units)*</u>	<u>Comments**</u>
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- * Group results by contaminant within each location/operation.
** Comments should address conditions, or changes during an operation which would affect the exposure results e.g., operation ended early, a spill occurred, equipment malfunctioned, etc.
Indicate the type of sample as follows: T = 8 hour time weighted average, S = short term sample (e.g. 15 minutes).