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 contr[illegible] re to Refinery streams through skin [illegible] onal protective work clothing when [illegible] dy exposure is likely.

(B) Ensure that employees are usin[illegible] giene to wash oils off skin surfaces if [illegible] ery streams occurs and to replace oil satu[illegible] g as soon as practical. Clean oily work to[illegible]

(B) In response to the upcoming Fe[illegible] Communication Standard, ensure that all refinery stocks and intermediates presenting some potential for worker exposure have been incorporated within the El Paso chemical inventory.

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CHV-900

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.

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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.

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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 SO_2 (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 V_2O_5 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.

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AREA 2

SRU and TGU

(B) Modify Channel 25 of the General Monitors fixed H_2S 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 H_2S concentrations while drawing D5950 overhead reflux samples. If such short-term H_2S 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 dedrumming/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.

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