



DOW CHEMICAL U.S.A.

LOUISIANA DIVISION
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INDUSTRIAL HYGIENE REPORT

MERCURY SURVEY, LOUISIANA DIVISION
INSTRUMENT SHOPS

FILE NO. 110-20-6
DATE June 25, 1975
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CHECKED *L. L. Helph*
DATE June 25, 1975

SUMMARY

Conducted screening survey for mercury vapors in the Instrument Shops throughout the division and followed up with a second survey after improvements were made.

The first survey indicated that twelve of seventeen shops were above OSHA regulations. The second survey was much improved and all shops now meet OSHA standards (0.05 milligrams per cubic meter).

It is recommended that a vacuum cleaner be purchased by the Instrument Department and designated for mercury clean-up in the division Instrument Shops. Periodic mercury clean-up and annual surveys should be scheduled by the department. Contaminated containers should be disposed of through the use of the landfill area.

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AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY



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INTRODUCTION

Conducted a screening check for mercury vapors in the Instrument Shops throughout the division to determine approximate vapor levels. This screening survey was followed up by another survey employing Drager tubes (specific for mercury vapors).

METHODOLOGY

Mercury vapor levels were first monitored with the Mercury Sniffer, model MV2, manufactured by the Bacharach Instrument Company. The second series of data was collected with the model 31 Drager Multi Gas Detector Pump.

RESULTS OF FIRST SURVEY

The initial survey revealed that twelve of seventeen Instrument Shops were above the OSHA standard of 0.05 mg/m^3 . There were nine shops in which free mercury was found in small amounts due mostly to spills from Manometers which did not have proper check valves or mercury capacitor tanks (return wells) installed. It was also found that mercury vapors were being released when the Manometers were in operation and not equipped with proper protective devices such as activated carbon tubes on vent, or vented to the outside.

COMMENTS

During the time interval between the two surveys most Instrument Shop personnel made a good effort to clean up the free mercury that was found and Manometer safety equipment was installed and vented in eleven shops. Four of the remaining six shops (Caustic, Glycol II, Light Hydrocarbons II and Utilities) have the necessary safety equipment but haven't installed it yet.

The Chlorinated Solvents plant has purchased an AMETEK Electropneumatic Calibrator which will eliminate the mercury Manometers in their shop.

RESULTS OF SECOND SURVEY

Results of the second survey are much improved and only one Instrument Shop (Poly B) failed to meet the OSHA standard of 0.05 mg/m^3 and corrective action was taken there.

The Poly B Shop Manometers, which are contained inside a panel and built into the wall, were disassembled and the area behind the panel was thoroughly checked and cleaned. The Manometer protective equipment was installed and vented outside the building. The shop was monitored again three days later which revealed less than 0.05 mg/m^3 mercury vapors.

CONCLUSIONS

Due to the difficulties encountered in cleaning up mercury spills it is recommended that a vacuum cleaner be purchased and designated for mercury clean up in all Instrument Shop areas. The Instrument Department should schedule periodic mercury clean up and annual surveys. The contaminated containers should be disposed of through the use of the landfill area.

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MERCURY SURVEYS

I April, 1975

II May, 1975

Location	(mg/m ³) Hg Level	Manometer Vented	Free Hg Found	(mg/m ³) Hg Level	Manometer Vented	Comments
Caustic	.093	No	Yes	< .050	No	Manometer safety equipment purchased - should be installed soon Portable building used for Instrument Shop - difficult to keep uncluttered
Cellulose	.130	No	Yes	< .050	Yes	
Chlor-Alkali II	.060	No	Yes	< .025	Yes	
Chlorinated Methanes	.070	No	No	< .050	Yes	AMETEK electropneumatic Calibrator is to be installed - will eliminate mercury vapors
Chlorinated Polyethylene	.150	No	Yes	< .050	Yes	
Chlorinated Solvents	.150	No	Yes	< .050	Yes	
Chlorine	.050	No	No	< .025	Yes	
Glycol I	.140	No	Yes	< .025	Yes	Manometer safety equipment installation has begun
Glycol II	.038	No	No	< .025	No	
Light Hydrocarbon I	.060	No	Yes	< .050	No	
Light Hydrocarbon II	.250	No	Yes	< .050	No	Rechecked after clean up and safety equipment hookup (< 0.05)
Polyethylene "A"	.030	No	No	< .050	Yes	
Polyethylene "B"	.300	No	Yes	< .050*	Yes	
Power	.043	No	Yes	< .050	No	In process of moving to new quarters - safety equipment will then be installed Instrument Shop to be enlarged soon - will probably find some free mercury when tearing out old workbench and cabinets
R&D	.060	No	No	< .050	Yes	
Utilities	--	No	No	< .050	No	
Vinyl	.700	No	Yes	< .050	Yes	

*NOTE - All obvious mercury spills appear to have been cleaned up, however, it can be reasonably assumed that these are certain amounts of free mercury in out-of-the-way places that are difficult to detect.

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