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Interoffice Communication

To : A. H. Sather

From : J. V. Uptain

Date : January 25, 1982

Subject : SUMMARY OF CHEMICAL EXPOSURE MONITORING, 1981

The results of 1981 chemical exposure sampling efforts are summarized in Table I (attached). With the exceptions of lead, total dust, and VCM overexposures, the results clearly indicate that comfortable margins of safety are present with the materials sampled.

Lead

In spite of continued overexposures, average results showed a decline from previous results:

Period	Micrograms/M^3
1978	93.0
1979	41.6
1980	20.4
1981	<9.5

The improved control is obvious and may permit a reduction in sampling frequency without increasing significant risk.

Total Dust

Although reported herein, the single overexposure of 20.1 milligrams/M^3 is regarded as questionable and probably due to gross contamination of the filter cassette when it was dropped (?) on the floor. This is admittedly speculative, but highly probable. Viewed in this light, the total dust results are all very low and total dust exposure assessed as essentially of little concern, provided existing controls are maintained.

As with lead, we are probably justified in reducing sampling frequency.

VCM

Unlike lead, no significant reduction of exposures during 1981 were evident:

Period	PPM, VCM
1978	1.5
1979	0.9
1980	0.4
1981	<0.46

A careful look at the frequency distribution of the results show clearly that the main sample population is tightly grouped in the 0 - 0.5 ppm range, and indicates that a significant reduction in sampling frequency should be possible without incurring significant risk. However, the 55 overexposures (6% of total samples) ranged as high as 155.8 ppm and occurred within work groups whose work and potential exposures are fairly unpredictable by their nature. This is especially so with mechanics and will require careful thought should we attempt to reduce sampling frequency.

The sampling distribution also implies that, on the whole, exposures are adequately controlled. Conversely, more control is needed on exceptional conditions as they are identified by overexposure results.

Antimony

We have yet to find a sample result of any significant magnitude. Based on this, we could probably drop the routine sampling without significant risk. This, of course, assumes existing controls (ventilation, etc.) are kept intact.

Plasticizer

The results of sampling were encouraging. Levels within the plasticizer building were (surprisingly) low, indicating the results of leak reduction efforts in the process area.

The highest (but still relatively low) exposures found occurred at the faces of compound mills. The source was fuming of plasticizer from the compound "belts". Should further exposure reductions be desired, improved ventilation at these points would be in order.

Chlorine

Control of chlorine was found to be very good, as evidenced by sampling and a careful inspection of the equipment. Due to the lethality of chlorine, and considering the amounts we stock, we must ensure that existing controls are carefully maintained.

CTA

We found that exposures to this aldehyde are very low compared to any safe limit reasonably anticipated (and none is!). The main problem, excluding fire hazards, is the extremely abnoxious odor involved during minor spills and leakages. This warning property is valuable, however, since few people would willingly inhale anything even faintly approaching a dangerous concentration.

Mercury

The mercury sampling results are misleading in that about half of them were taken during a mercury spill on the I & E shop floor, partly for the purposes of an object lesson for I & E workers, who witnessed the sampling. During this event, it was possible to discuss (and see!) the importance of handling mercury with care. Decontamination procedures were also demonstrated. Sampling of the area since that time has shown no detectable amounts present.

Phthalic Anhydride

Phthalic sampling was minimal, with the results being low. The one dosimetry sample of 0.7 milligrams/M^3 is regarded as significant since it was obtained while a yard operator was hooking up a phthalic car whose top lid had to be opened. The operator was in close proximity to the open lid during most of the 6.5 minute sampling period.

Tin

Tin sampling revealed low exposures from the dry blend stabilizers. As noted above, maintaining present controls should result in minimum risks involving tin exposure.

Although planned, certain materials were not monitored during 1981 for the reasons noted:

Arsenic & Hydroquinone

Usages of Vinzene SB-1 and hydroquinone were spotty throughout the year and there was difficulty in scheduling such sampling. In addition, there was and is little reason to suspect any significant exposures exist.

Heavy Alcohols

Based mostly on the disagreeable odor of alcohols in the plasticizer building, it was desired to measure exposure levels. However, repeated inquiries failed to reveal a reliable sampling method.

Nitric Oxide

Plans for sampling this material were suspended since the closed system is pressure-checked with nitrogen during each reactor safety disc or seal change. In addition, gross leaks are obvious by their characteristic brown color. No such gross leaks have been seen, although slight ones are occasionally evidenced during pressure tests.

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Sodium Hydroxide

This material was not monitored in favor of placing concern on the more critical danger of skin contact.

Freon Refrigerants

No method for monitoring these materials was found, although we think the "REAL" badge may be used for Freon 12. The latter has yet to be verified, however.

Alpha Methyl Styrene

Although we had the capability, work on monitoring this chemical was slighted in favor of others of greater concern, especially CTA.

Jerald Uptain

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C: JF, CRM, Department Heads