

KODAK RELIABLE IMAGE TIP # 9



Date: December 31, 2003

Subject: Brown Toner - Deep Tank Processing Health, Safety and Environmental Considerations.

Microfilm processors who use Brown Toner in deep tank applications should thoroughly review the product Material Safety Data Sheet (MSDS). Based on the warnings within the KODAK MSDS, there is a potential to off-gas hydrogen sulfide (H₂S) from this process.

The replenisher holding tank will likely off-gas detectable amounts of H₂S on standing. A replenisher tank with top cover may build up 3 to 8 ppm H₂S in the headspace air.

There will likely be off-gassing of hydrogen sulfide in the process machine, both on standing and with significant H₂S evolution expected during processing, caused by fix carryover into toner.

Although problems in the sewer are unlikely due to the fact that wash water and other wastewater will be discharged from the facility during process machine operation, it is possible that conditions inside the sewer could be such that H₂S gas is evolved inside the sewer.

Occupational Exposure Values

OSHA PEL'S AND ACGIH TLV'S

Substance	ACGIH TLV's		OSHA PELs	
	TWA	STEL/CEIL (C)	TWA	STEL/CEIL (C)
Hydrogen Sulfide	(10 ppm)	(15 ppm)		C 20 ppm ; 50 * ppm)
CAS # 7783 07 5				
	NIC – 5 ppm			

OSHA General Industry PEL (permissible exposure level). 20 ppm ceiling for 10 minutes once, only if no other measurable exposure occurs; 50 ppm peak.

ACGIH: 10 ppm (14 mg/m³) TWA; 15 ppm, 21 mg/m³ STEL (Short Term Exposure Level)

ACGIH – American Conference of Governmental Industrial Hygienists

C – Ceiling; The concentration that shall not be exceeded during any part of the working exposure.

NIC – TLV notice of intended change

PEL – Permissible exposure level

TWA – Time weighted average

Recommendations:

Per previous guidance and the 1990 article by Wassel, a floating lid on the replenisher holding tank and good ventilation of same are both recommended.

Per the 1990 article, a covered and well-vented process machine toner tank would be needed to assure any H₂S is removed from the immediate process machine area.

Personal protective equipment (PPE) should be kept on site, including respirator(s) capable of removing hydrogen sulfide.

Good ventilation and proper PPE should be provided during replenisher tank and process machine maintenance.

Hydrogen sulfide detectors should be used in both the process machine room and chemical mix area.

To avoid the possibility of large concentrations of toner being present in the sewer during processing, wash water should be running at all times during processing and during routine maintenance.

Depending on conditions inside the sewer, acidic conditions or low flow, large discharges of toner should be avoided.

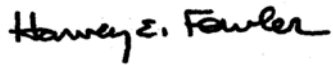
It may be necessary to install a scrubber on the ventilation system from processor and chemical mix area. The lab should investigate whether or not an air scrubbing system is necessary to adhere to air discharge regulations, and to be proactive in case neighbors

complain of the odor. If so, a reputable engineering firm should be hired to design an adequate system for the facility.

Pursuant to your request, Kodak has provided the information contained herein. You must evaluate the appropriateness of all information and recommendations for your work environment. Kodak assumes no liability for any action or reliance of yours based upon the information or recommendations provided. This report is part of Kodak's product stewardship and customer satisfaction efforts and may include recommendations for your facility.

Please let us know if you have any questions. I can be reached at 585-722-4493.

Sincerely,

A handwritten signature in black ink that reads "Harvey E. Fowler". The signature is written in a cursive style with a clear, legible font.

Harvey E. Fowler REM CHMM
Manager North American Region
Eastman Kodak Company