

the sodium nitrite released by dyes and/or pigments facilities was in wastewaters sent to POTWs or discharged under NPDES permits to surface water. Because our screening assessment is likely to be very conservative, and because it is unlikely that any nonwastewaters from dyes and/or pigments production contain sodium nitrite at levels exceeding the screening analysis results, we believe that it is not necessary to set a nonwastewater loading limit for this chemical.

g. What Are the Risk Assessment Results for Wastewaters?

We developed mass loading limits for wastewaters managed in tanks and in surface impoundments. For surface impoundments, we calculated risk-based mass loading limits for both the air and groundwater pathways. For tanks, because of their relative impermeability, we calculated limits based only on the air pathway.

We assumed that allowable loadings in excess of 100,000 kg/yr were implausible. In developing this

assumption, we used this plausibility threshold to calculate a theoretical wastewater concentration. At 100,000 kg/yr, we estimate that typical wastewater constituents concentrations would be 163 ppm.³⁵ To test the validity of this assumption, we looked at the available analytical data for wastewaters, as summarized in the masked and aggregated results presented in the Listing Background Document. We found only one constituent of concern—aniline—with wastewater concentrations above 163 ppm.³⁶ Thus, the sampling data generally support our assumption that constituents of concern will not be found in wastewaters in amounts exceeding 100,000 kg/yr.

As discussed in sections III.D, III.E, and IV.C, we believe that the mostplausible impoundment scenario for these industries is management of wastewaters in synthetic-lined impoundments. For the groundwater ingestion pathway of the synthetic-lined impoundment scenario, none of the

modeled wastewater constituent loadings are less than 100,000 kg/yr. As a result, we conclude that our assessment of the synthetic-lined surface impoundment scenario did not identify any constituents that present a concern for the groundwater ingestion pathway. For specific results, see the Risk Assessment Background Document.

For both tanks and/or surface impoundments, the loading limits for the air pathway for 10 of the 17 constituents modeled were below 100,000 kg/yr. These constituents are shown in Table III-3. The air pathway results did not vary significantly for surface impoundments under the various liner scenarios. We show the results for the synthetic-lined impoundments below. Our evaluation of these results are presented in section IV.C. The Risk Assessment Background Document presents additional results for the unlined and clay-line surface impoundment scenarios.

TABLE III-3. MASS LOADING LIMITS FOR POSSIBLE CONSTITUENTS OF CONCERN IN TANKS AND SURFACE IMPOUNDMENTS DUE TO AIR EMISSIONS ¹

Chemical	CAS No.	Mass loading (kg/yr)	
		Tank	Surface impoundment
Aniline	62-53-3	2,700	1,500
Naphthalene	91-20-3	2,200	2,200
Azobenzene	103-33-3	3,700	2,400
o-Toluidine	95-53-4	2,600	2,400
o-Anisidine	90-04-0	9,500	2,900
p-Cresidine	120-71-8	50,000	13,000
Formaldehyde	50-00-0	>1.0E+05	14,000
Toluene-2,4-diamine	95-80-7	>1.0E+05	51,000
1,2-Dichlorobenzene	95-50-1	71,000	63,000
Benzidine	92-87-5	>1.0E+05	89,000

¹ Levels represent the 90th percentile minimum loading limit derived from probabilistic analysis for the air pathway for tanks and synthetic-lined surface impoundments.

We also conducted a screening analysis for sodium nitrite, which resulted in loading limits of 19,277 kg/yr for the unlined impoundment and 48,807 kg/yr for the clay-lined impoundment; the loading limit for the synthetic-lined impoundment scenario was well above the 100,000 kg/yr level. As discussed for the landfill scenario, nitrite exists in the environment in equilibrium with other forms of nitrogen. As noted previously, the modeling results for sodium nitrite represent a conservative screening

analysis that incorporated a variety of simplifying assumptions. In this case, we also believe that nitrite is likely to be converted to nitrate in the aerobic environment of a surface impoundment.³⁷

The only TRI release of sodium nitrite to wastewater comparable to these screening levels was one quantity of 20,586 kg/yr (released to a POTW, not an impoundment). This release is barely above the very conservative loading from our screening analysis for an unlined impoundment (19,277 kg/yr),

but well below the loading limit for the clay-lined scenario (48,807 kg/yr). Furthermore, the loading limit for the synthetic-lined impoundment (which is the most plausible management practice) is well above the level of concern. Because our screening assessment is likely to be very conservative, and because wastewaters from dyes and/or pigments production are unlikely to contain sodium nitrite at levels exceeding the screening analysis results, we believe that it is not

³⁵ Assuming an average wastewater quantity of 615,000 metric tons/yr, see "Economic Assessment for the Proposed Loadings-Based Listing of Non-Wastewaters From the Production of Selected Organic Dyes, Pigments, and Food, Drug, and

Cosmetic Colorants" in the docket for today's proposal.

³⁶ A second chemical, acetone, also exceeded 163 ppm in some samples. Acetone, however, is not a constituent of concern in this rulemaking because it is typically used as a solvent (rather than an

intermediate) and as such is already subject to regulation as a hazardous waste under F003.

³⁷ Note that the toxicity benchmark for nitrate (Rfc) in IRIS indicates that nitrate is 16-fold less toxic than nitrite.