

benchmark. The screening assessment was neither designed nor intended to provide definitive risk estimates. The assessments simply indicate the potential for adverse ecological effects to a variety of wildlife and provide information on the ongoing assessment of ecological risks associated with the agricultural application of sewage sludge. Additional details concerning the screening assessment are presented in sections 2 and 3 of the TBD.

#### **X. Results of the Review of the Part 503 Regulations Under CWA Section 405(d)(2)(C)**

Of the 40 pollutants for which EPA conducted its exposure and hazard screening assessment, 15 have hazard quotients (HQs)<sup>3</sup> that either exceed one for human receptors, or equal or exceed one for ecological receptors. We considered these 15 pollutants to have failed the screen, and, therefore, constitute the final results of EPA's current review under section 405(d)(2)(C) of the CWA. The details of screening results for all pollutants in this screening analysis are found in the TBD (USEPA, 2003b).

The results of the human and ecological exposure and hazard assessments contained in this section are intended to identify those pollutants that warrant further consideration for rulemaking. These results also indicate which exposure pathway or pathways should be the focus of further

consideration with respect to these pollutants.

EPA expects to complete a more refined risk assessment and characterization for these 15 pollutants for purposes of determining whether, and if so for which, of these 15 pollutants EPA will propose rule amendments under section 405(d). Upon completion of additional assessments, if indicated, EPA will initiate a proposed rulemaking under section 405(d). Any proposed regulations may take the form of numerical limits, best management practices, or other controls and limitations needed to protect the environment and human health. The results of EPA's review described in today's notice (*i.e.*, the identified 15 pollutants) do not mean that EPA has concluded that these pollutants in sewage sludge adversely affect human health or the environment. Some, or perhaps even all, of these pollutants may not be present in concentrations that warrant regulation; or a refined risk assessment may indicate that there is insufficient risk to human health or the environment to warrant regulation. The results of EPA's review mean that EPA will obtain updated concentration data for these pollutants and will conduct a refined risk assessment using the new concentration data to determine whether to propose amendments to part 503 in order to regulate any of these

pollutants under section 405(d) of the CWA.

#### **A. Results of Human Health Screening Assessment**

EPA performed a human health exposure and hazard screening assessment using both cancer and non-cancer endpoints. None of the chemicals with cancer end-points had HQs equal to or greater than one, or were considered to have failed the screen, for either the land application, surface disposal, or incineration scenarios. Also, no pollutant with a non-cancer endpoint failed the screen on the basis of inhalation exposure, either from incineration or indirectly from land application or surface disposal. Thus, EPA has identified no additional pollutants to consider for rulemaking for sewage sludge that is disposed of by incineration in a sewage sludge incinerator. However, as explained below, some pollutants failed the screen for non-cancer risks when screened for the land application and surface disposal scenarios. Table 5 presents the results for the pollutants that had HQs greater than one for the agricultural land application scenario, and Table 6 presents the results for the pollutants that had HQs greater than one for the sewage sludge lagoon scenario. Values are presented for pollutants at the 95th percentile exposure scenario of the HQ distribution.

**TABLE 5.—HUMAN HAZARD QUOTIENT VALUES GREATER THAN ONE BY PATHWAY FOR THE AGRICULTURAL LAND APPLICATION SCENARIO AT THE 95TH PERCENTILE OF THE HQ DISTRIBUTION**

CASRN	Chemical	Pathway receptor	HQ
14797-65-0 .....	Nitrite .....	Ingestion of Surface Water: Child	1.1
		Total Ingestion: Child .....	1.3
7440-22-4 .....	Silver .....	Ingestion of Milk:	
		Adult .....	3.8
		Child .....	12.0
		Total Ingestion:	
		Adult .....	4.0
		Child .....	12.3

**TABLE 6.—HUMAN HAZARD QUOTIENT VALUES GREATER THAN ONE BY PATHWAY FOR THE SEWAGE SLUDGE LAGOON SCENARIO AT THE 95TH PERCENTILE OF THE HQ DISTRIBUTION**

CASRN	Chemical	Pathway receptor	HQ
7440-39-3 .....	Barium .....	Drinking Water from Groundwater:	
		Adult .....	1.5
		Child .....	3.5
106-47-8 .....	4-Chloroaniline .....	Drinking Water from Groundwater:	
		Adult .....	2.7
		Child .....	6.4
7439-96-5 .....	Manganese .....	Drinking Water from Groundwater:	
		Adult .....	32
		Child .....	76

<sup>3</sup> Exposure at or below the HHB values are considered protective of human health. Hence, the HQ values greater than one are considered to have

failed the human health screen. Exposure at or above the ecological benchmarks or values are considered to exceed a level considered to be

protective of wildlife species and the environment. Hence, the HQ values equal to or greater than one are considered to have failed the ecological screen.