Survey of Recovery and Treatment Technologies for Mercury Containing Wastes and Byproducts

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Mercury is emitted into the atmosphere by natural and artificial, which the former sources include volcanic activity, tectonic, sea, soil and vegetation, and the latter sources include fossil fuel combustion, waste incineration, cement manufacturing, non-ferrous metals, and mining. Most of researches and technologies on mercury management and international conventions were mainly focused on such atmospheric emissions of mercury. In some results on air emission inventory information, mercury to air emissions is especially found to be effective through the existing air pollution control devices in anthropogenic sources. In consequence, mercury is remained in waste and waste water discharged from these air pollutant control devices at the facilities, and the importance of management of solid and liquid media containing mercury is occurred recently. Some technologies can be applied to stabilize and recover mercury from such different phase media. For example, solidification/ stabilization technology can treat soil, sludge, liquid waste, and elemental mercury. Also groundwater and various types of wastewater are treated using precipitation/co precipitation technology. In this survey the status of such technologies and applicability of them were evaluated with suggesting future research and development needs. Several technologies were identified as effective ones in treatment of mercury contained in media like soil, sludge, industrial waste, elemental mercury as well as in groundwater and wastewater.

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