

2.0 PRESENTATION OF THE CASE STUDY

The National Focal Point Thailand POPs Team selected the Metropolitan Electricity Authority (MEA) Facility in Samut Prakan as an illustrative case-study site for a human health risk assessment concerning PCBs. The site was established on August 1, 1958 and covers a land area of 4,400 m².

The study site is located at the end of Suksawat 53, south of downtown Bangkok on the banks of the Chao Phraya River (about 5 km from the river mouth where the Chao Phraya drains into the Gulf of Thailand). The area is heavily industrialized.

The site has been owned and operated by the Metropolitan Electricity Authority (MEA) for at least 20 years and was used until 2003 for storing old transformers, capacitors, used and defective or broken electric equipment, as well as for repairing and dismantling electrical equipment. It was also used for storing and decommissioning used PCB-containing capacitors and transformers. MEA is a state-owned enterprise in charge of distributing electrical power in the Bangkok Metropolitan area, which serves under the overall jurisdiction of the Ministry of Interior (MOI).

Contamination at the MEA site is caused primarily by: leakage of fluids during the storage of transformers and during their decommissioning; off-site transport of contaminants by rainfall-runoff, wind, and trucks; improper handling of PCB containing equipment and fluids; and the disposal of old electrical equipment and waste. All of these operations are performed in the warehouse compound, especially in open-air storage areas. Contaminants are known to migrate to the soil, sediments, water and biota as a result of the MEA site operations, and to enter the human population (through dermal contact and consumption of contaminated food). This was confirmed through blood sampling of populations at risk.

The risk assessment conducted as part of the POPs Project identified several categories of receptors (i.e., population potentially exposed to contamination), including approximately 733 people. The full-time workers and guards at the MEA site are considered to have the greatest potential of exposure. Local residents may also be potentially exposed, as well as regular visitors and shift workers. Members of the local community and students of the nearby school are susceptible to exposure through migration of the contaminants (dust, water). A detailed description of the site surroundings and operations, as well as key results of the site risk assessment, is provided in Appendix A1.

As part of the risk assessment conducted for the MEA site, various measures aimed at efficiently managing and reducing the POPs hazard were identified. These measures were developed with stakeholder inputs gathered at the National Training Workshop in Hua Hin, Thailand in January 2009 (Hatfield, 2009b) and have been grouped into 3 scenarios as presented in Appendix A1.

Three risk management objectives have been identified: mitigation of the POPs hazard; containment of the existing contamination; and remediation of the site. It should be noted that improving Health and Safety Measures (Scenario 1) is the short-term priority; containment and disposal (Scenarios 2 and 3, respectively) are longer-term and more costly options. Furthermore, it must be noted that the measures of Scenario 1 are included in the other two scenarios (which represent “improvements” to the basic management option rather than pure alternatives). Without adequate management of the POPs hazard, mitigation and containment measures only have limited efficacy because in the absence of effective management addressing contamination, human exposure risk would increase again over time.

An outline of the risk management scenarios has been provided in Appendix A1; detailed feasibility studies are needed to define in detail the nature and extent of the measures to be implemented, especially with regard to the containment and remediation scenarios.