

Adapting to Rising Tides



Hazardous Material Sites Vulnerability and Risk Profile

Hazardous materials are substances that pose a risk to human health and the environment. They can be liquid, solid, sludge, or gas; and may be the byproducts of industrial/manufacturing operations or discarded commercial products such as pesticides and cleaning solvents. Facilities that generate and store hazardous materials in the ART project area include laboratories, manufacturing facilities, gas stations, and transportation operation maintenance facilities. Hazardous materials can be stored inside buildings or outdoors, depending on the type of substance and local regulations. Geo-referenced data was only available for generators of hazardous waste, a subset of hazardous materials, and exposure analysis was only conducted for large and small generators of hazardous waste (LQGs and SQGs), as defined by the Resource Conservation and Recovery Act (RCRA).

Key Issues

There are 152 LQGs and SQGs in the ART project area. These facilities are concentrated largely in Oakland, Hayward, and Emeryville, and storm related flooding at mid-century could affect numerous facilities at the same time. A lack of well-coordinated information about the location and type of materials at these facilities reduces managers capacity to prepare and respond to emergencies. A multi-hazard, multi-site emergency could have adverse impacts on public and environmental health. Additionally, the lack of publicly available information about sites where hazardous materials are present, but which do not fall into the LQG or SQG classification, creates additional challenges in properly preparing for and responding to emergencies that could result in the release of hazardous materials.

Vulnerabilities	Consequences
<p>Timing</p> <ul style="list-style-type: none">At mid-century, approximately 30% (54) of the hazardous waste facilities in the ART project area will be exposed to wind waves during storm events.By the end of the century, 20% (31) of the hazardous waste facilities in the ART project area will be exposed to regular tidal flooding, and more than 50% (68) to periodic storm events flooding. <p>Physical and Functional Qualities</p> <ul style="list-style-type: none">Flooding during a storm event could cause releases of hazardous materials if they are not well contained, improperly stored, at ground level, or are difficult to move. Release could also occur if floodwaters enter tanks and force out toxic liquids, or if uncontained wastes – in pits or piles – come into contact with floodwaters.Facilities with hazardous materials stored below ground could be vulnerable to rising groundwater. <p>Information</p> <ul style="list-style-type: none">It is difficult to quickly and accurately determine the locations of hazardous materials in the ART project area due to the many different databases and reporting systems, and the reliance on local emergency responder knowledge.	<p>Scale</p> <ul style="list-style-type: none">Adjoining properties and neighborhoodsCity-wideThroughout the ART project area <p>People</p> <ul style="list-style-type: none">Flooding of hazardous materials sites could expose people where they live, work, and recreate to substances harmful to human health and safety.Facilities that generate or store hazardous materials are often job sites, and their disruption or closure can affect people's livelihoods. <p>Ecosystem Services</p> <ul style="list-style-type: none">Release of hazardous materials into floodwaters can affect water quality.Highly persistent and very mobile hazardous materials can have long-lasting and far-reaching impacts on wildlife and habitats. <p>Economy</p> <ul style="list-style-type: none">Flooding of hazardous materials sites can strain local emergency resources and can result in high cleanup and recovery costs.Closure of hazardous materials sites, which are often employment and business centers, can affect the economic health of the neighborhood, city, or region where the impact occurs.

Vulnerabilities

Management Control

- Facility vulnerability will depend on the level of compliance with operational and regulatory requirements, including material inventories and contingency plans.
- The involvement of multiple agencies in responding to hazardous materials emergencies both increases the resources available and the potential for confusion and inefficiency if contingency plans are not well coordinated or executed.