Organic Chemicals

Characterization of the Organic Chemical Industry

The chemical manufacturing industry (SIC 28) produces an enormous number of materials. It is estimated that there are over 15,000 chemicals manufactured in the U.S. in quantities greater than 10,000 pounds. The organic chemicals industry, which manufactures carbon-containing chemicals, accounts for much of this diversity.

The industry is divided into three categories: gum and wood chemicals, cyclic organic crudes & intermediates, and industrial organic chemicals not elsewhere classified:

- Gum and wood chemicals (SIC 2861) are materials that are distilled or otherwise separated from wood. The most common products of the industry are charcoal, tall oil, rosin, turpentine, pine tar, acetic acid, and methanol. Because the products are wood-based, many of the major producers are in the pulp and paper industry (Kline & Co., 1999).
- Cyclic organic crudes and intermediates (SIC 2865) are materials processed from petroleum, natural gas, and coal. Important products include benzene, toluene, xylene, and naphthalene. Typically these products are consumed by downstream industries included in Table 1. Manufacturers of synthetic dyes and organic pigments also are included in this SIC code (U.S. Department of Labor, 2001).
- Industrial organic chemicals, not elsewhere classified (SIC 2869) is by far the largest and most diverse component of the organic chemicals industry. Its products may be either intermediates or end products.

The industrial organic chemical market has two broadly defined categories: commodity and specialty. Commodity chemical manufacturers compete on price and produce large volumes of small sets of chemicals using dedicated equipment with continuous and efficient processing. Specialty chemical manufacturers cater to custom markets, manufacture a diverse set of chemicals, use two or three different reaction steps to produce a product, tend to use batch processes, compete on technological expertise and have a greater value added to their products.

Common inputs, or feedstocks, for the industry are supplied by petroleum refiners: ethylene, propylene, benzene, methanol, toluene, xylene, butadiene, and butylene (Szmant, 1989). As noted previously, other feedstocks come from coal, natural gas, and wood.
Environmental Exposures Analysis for Organic Chemical Industry

- Atmospheric emissions from stack, vent, and material loading/unloading operations
- Fugitive air emissions: pumps, valves, flanges, sample collection, mechanical seals, relief devices, tanks
- Management and disposal of solid and hazardous wastes
- Releases of raw materials, finished products and wastes to soil, surface water and groundwater
- Known and unknown pre-existing contamination from historic operations
- Release of raw materials, finished products and wastes during transportation
- Release of raw materials, finished products and wastes from pipelines

Potential Risks and Exposures Encountered in Manufacturing

Accidental discharge of untreated process wastewaters to municipal wastewater treatment plants and surface waters

- Storage of raw materials, finished products, and waste materials in tanks and containers
- Contamination of soil, surface water and groundwater from stormwater runoff contaminated from chemical drips, leaks, and spills
- Releases due to the failure of process equipment resulting in chemical releases to the environment
- Breach of containment for storage tanks and loading and off-loading areas
- Releases from underground storage tanks
- Inadequate assessment of potential impacts to soil and groundwater from past spills and releases to on-site soils
- Odors and noise creating nuisance conditions in the neighborhood
Aon’s Value Proposition

Aon Environmental is the global leader in the development of risk management solutions to help clients evaluate and mitigate their environmental risks. Our value proposition to you is best expressed by the following three guiding principles:

Identify Risks
- Physical and operational reviews
- Past, present and future view
- Contractual analysis

Mitigate and/or Transfer
- Manuscripted coverage
- Risk financing options
- Claims / Litigation assistance

Measure Risks
- Conduct probabilistic model analysis
- Magnitude of loss potential
- Regulatory guidance and assistance

By utilizing a multi-disciplinary approach combining both business and technical knowhow, Aon can assess, quantify, mitigate, and transfer environmental risks by delivering coverage that is tailored to the unique needs of each client.

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Aon Environmental is a corporate specialty practice dedicated solely to providing environmental risk management support to Aon clients and prospects. Environmental risk management is highly specialized and Aon provides expert environmental assistance in the areas of insurance, claims, environmental risk management, and engineering expertise.