Regulations Impacting the Chemical Industry

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SOCMA History: Deep Roots to ACS & GA

- SOCMA’s 1st president, Dr. Charles Herty:
  - Born and raised in Millegedville.
  - Graduated from UGA, later became a Professor of Chemistry.
  - Formed and coached the first football team at UGA.
  - Editor of an early ACS publication on industrial and engineering chemistry
  - Served as ACS President between 1915-1916.
  - Instrumental in creation of the National Institutes of Health.
  - His research & advocacy led to the creation of a new pulp industry in the Southern United States.

- Numerous buildings at Georgia state colleges are named in his honor & the Georgia Section of the ACS has awarded the Charles H. Herty Medal each year since 1933 for outstanding chemists in the Southern US.
Federal Departments Regulating the Chemical Industry

• Environmental Protection Agency (EPA)
• Consumer Product Safety Commission (CPSC)
• Department of State
• Department of Commerce
• Department of Homeland Security (DHS)
• Department of Transportation (DOT)
• Federal Aviation Administration (FAA)
• Occupational Safety and Health Administration (OSHA)
• and in some cases, the Drug Enforcement Administration (DEA), Nuclear Regulatory Commission (NRC), and Alcohol and Tobacco Tax and Trade Bureau (TTB)
Environmental Protection Agency (EPA)
• Toxic Substances Control Act (TSCA)
• Clean Air Act
• Clean Water Act
• Resource Conservation and Recovery Act
• Safe Drinking Water Act
• Emergency Planning and Right to Know Act
• Comprehensive Environmental Response, Compensation, and Liability Act

Consumer Product Safety Commission (CPSC)
• Federal Hazardous Substances Act
• Poison Prevention Packaging Act
Department of State
• International Traffic in Arms Regulations

Department of Commerce
• Export Control Regulations
• Chemical Weapons Convention

Department of Homeland Security (DHS)
• Chemical Facility Anti-Terrorism Standards
Department of Transportation (DOT)
• Hazardous Material Transportation Act

Federal Aviation Administration (FAA)
• Dangerous Goods Regulations Administration and Enforcement

Occupational Safety and Health Administration (OSHA)
• Hazard Communication Standard
• Process Safety Management Standard
• Hazardous Waste Operations and Emergency Response Standard
• Numerous other standards
Clean Air Act (CAA)

- Establishes requirements for airborne emissions from a variety of sources, including stacks, processing tanks, and even "fugitive" emissions from leaks and other sources.

- EPA, state, and regional air quality agencies are all likely to be involved in CAA implementation.

- For stationary sources like chemical plants, the CAA covers 3 main types of pollutants:
  - Criteria air pollutants that affect general air quality – e.g., SO2, particulates, ozone
  - New Source Performance Standard (NSPS) pollutants – e.g., H2S, Fluorides
  - Air Toxics (also called Hazardous Air Pollutants or HAPs) – e.g., VOCs and other toxics

- The CAA may also be used to address climate change.
Clean Water Act (CWA)

• The Clean Water Act (CWA) regulates discharges to surface waters with the overall goal to restore and protect the nation's surface waters. The Act may be implemented either by EPA or by state agencies.

• There are five major types of CWA requirements to plan for:
  – "Point source" direct discharge limitations, i.e., the NPDES limitations
  – Stormwater discharge standards
  – "Pretreatment" standards for sewer discharges
  – Spill prevention and response
  – Wetlands modification &/or dredge and fill activities
Hazard Communication Standard (Worker Right-to-Know)

• The OSHA Hazard Communication Standard (HCS) is intended to insure that workers are informed about workplace chemical hazards.

• Companies are required to develop a hazards communication program that includes: identifying hazardous chemicals used, labeling containers, maintaining an information site for Material Safety Data Sheets (MSDSs), and training workers in chemical safety.

• The MSDS must also be made available to customers.
Chemical Facility Anti-Terrorism Standards (CFATS)

- The Chemical Facility Anti-Terrorism Standards (CFATS) is a federal regulation implemented by the U.S. Department of Homeland Security (DHS).

- The standards could apply to a facility that manufactures, uses, stores, or distributes certain chemicals at or above their respective Screening Threshold Quantities (STQ).

- CFATS is a set of risk-based performance standards that require covered chemical facilities to prepare Security Vulnerability Assessments, which identify facility security vulnerabilities, and to develop and implement Site Security Plans, which include measures that satisfy risk based performance standards. It also allows certain covered chemical facilities, in specified circumstances, to submit Alternate Security Programs in lieu of a Security Vulnerability Assessment, Site Security Plan, or both.
Toxic Substances Control Act (TSCA)

- TSCA authorizes the EPA to screen existing and new chemicals used in manufacturing and commerce to identify potentially dangerous products or uses that should be subject to federal control.

- Federal legislation to control toxic substances was originally proposed in 1971 by the President’s Council on Environmental Quality. Its report, “Toxic Substances,” defined a need for comprehensive legislation to identify and control chemicals whose manufacture, processing, distribution, use, and/or disposal was potentially dangerous and not adequately regulated under other environmental statutes.

- President Ford signed TSCA into law on October 11, 1976.
Toxic Substances Control Act (TSCA)

• The original legislation included a single title, which has since been designated Title I.

• Five titles have been added to TSCA to address specific concerns:
  – Asbestos in 1986
  – Radon in 1988
  – Lead in 1992
  – Schools in 2007
  – Formaldehyde in 2010

• No overall amendments since 1976
Toxic Substances Control Act (TSCA)

- Primary aim of TSCA: to be the main federal statute for management of chemicals, especially in products
  - FDA regulates personal care, food, etc.
  - CPSC regulates consumer products
  - OSHA regulates worker exposure
  - TSCA has coordination provision

- TSCA requires industry to provide information on chemicals, mainly through testing

- EPA evaluates that information and regulate as necessary to protect against unreasonable risk
Toxic Substances Control Act (TSCA)

- Congress wanted EPA to address hazards of all chemicals

- Over 55,000 chemicals in commerce in 1979
  - These created the TSCA Inventory of Existing Chemical Substances

- Overwhelming job to regulate all

- Marketplace reliance on these chemicals

- Created the Interagency Testing Commission (ITC)
  - Prioritized the chemicals that needed testing
Toxic Substances Control Act (TSCA)

• New chemicals should be reviewed before allowed to enter commerce – receive EPA risk assessment

• Manufacturer/importer of new chemical must submit Pre-Manufacture Notice (PMN) to EPA at least 90 days prior to manufacture
  – Full exemption for R&D chemicals
  – Limited exemptions for polymers, low-volume chemicals
  – EPA to reviews in 45 days
  – No data required; EPA may use modeling to assess
Toxic Substances Control Act (TSCA)

• If EPA identifies unreasonable risks associated with existing or new chemicals, TSCA requires the agency to initiate rulemaking to reduce risks to a reasonable level.

• Under TSCA EPA has the authority to
  – prohibit or limit the amount of production or distribution of a substance in commerce;
  – prohibit or limit the production or distribution of a substance for a particular use;
  – limit the volume or concentration of the chemical produced;
  – prohibit or regulate the manner or method of commercial use;
  – require warning labels and/or instructions on containers or products;
  – require notification of the risk of injury to distributors and, to the extent possible, consumers;
  – require record-keeping by producers;
  – specify disposal methods; and
  – require replacement or repurchase of products already distributed.
Toxic Substances Control Act (TSCA)

• However, TSCA directs EPA to use the least burdensome option that can reduce risk to a level that is reasonable, given the benefits provided by the chemical product or process.

• After review ends and manufacture begins, new chemical becomes an existing chemical by EPA adding it to the Inventory

• Currently about 84,000 chemicals on TSCA Inventory
  – Only about 25,000 currently in commerce
  – EPA reviews approximately 1000 new chemical manufacturing notices annually
Canada: Chemicals Management Plan (CMP)

• The Chemicals Management Plan protects human health and the environment by assessing chemicals used in Canada.

• The Chemicals Management Plan addresses environmental and health risks under various laws including the *Canadian Environmental Protection Act, 1999*, the *Pest Control Products Act*, the *Hazardous Products Act*, and the *Food and Drugs Act*.

• Since 1994, the Government must be notified of any substances that are new to Canada before they can be imported or used in manufacturing, so that the Government is given an opportunity to assess the substances to determine if they pose a risk to human health and/or the environment.
Canada:

Chemicals Management Plan (CMP)

- If a substance is found to pose a risk to human health or the environment, control measures may be put in place before it enters the Canadian marketplace or is used by industry. If the risks are unmanageable, permission for using the chemical in Canada can be denied.

- The Government of Canada assesses approximately 500 new chemicals each year.

- Prior to 1994, many chemicals used in Canada were not subject to Government environmental and health risk assessments. Between 1999 and 2006, the Government of Canada classified the chemicals, according to specific criteria, and then identified those 'existing' chemicals that required a health and/or environmental risk assessment.

- Approximately 4,300 chemicals were divided into high, medium, or low priority for action so that the Government would focus immediately on chemicals of greatest concern. These actions, and many others, are currently being undertaken through the Government of Canada's Chemicals Management Plan.
European Union: REACH

• In 2003, the European Commission prepared a draft proposal to overhaul the chemical control regulations in Europe.

• After much debate and many amendments, the EU Parliament and Council of Minister finalized the regulatory scheme, called REACH (Registration, Evaluation and Authorization of Chemicals). The legislation went into effect in mid-2007 with the launch of the European Chemicals Agency, which oversees the regulations.

• It requires up-front testing on new chemicals that will be introduced into European commerce and phased-in testing for chemicals that already exist in the marketplace.
European Union: REACH

• Manufacturers and importers of a substance in quantities below 1 tonne (1000kg) per year are not subjected to registration.

• For chemicals that are known to possess certain hazards, such as carcinogens, mutagens and reproductive toxicants, or CMRs, companies will be required to obtain authorization for their continued use and implement either a substitution plan or R&D plan to find an alternative. After a certain period, the EU expects that those substances would be withdrawn from the marketplace.
SOCMA’s ChemAlliance Virtual Plant Tour

- Cooling Towers
- Boilers & Furnaces
- Heat Exchangers
- Vent/Flare
- Storage Tanks
- Piping
- Separation
- Reactor
- Equipment Cleaning
- Injection Well
- Wastewater
- Town
- Construction
- Loading Station
- Warehouse
- Remediation
- Hazardous Waste
- Laboratory
- Incinerator
- Landfill
- Office
Stop 01: Cooling Towers

- Cooling towers can be a significant source of wastewater at a chemical plant.

- The main law governing wastewater discharge is the Clean Water Act (CWA). The Clean Water Act covers discharges of wastewaters from a facility, including discharges either piped to a sewer authority or released directly to a waterway via an "outfall."
Stop 02: Boilers & Furnaces

• This boiler is part of the plant's production system. Since boilers and furnaces emit air exhausts, they will be regulated as emissions sources under the Clean Air Act.

• Boilers may also be subject to state or local safety-related regulation. Boiler blowdown must be managed as a wastewater source; and any solid waste generated from boiler or furnace cleanout will have to be evaluated as hazardous waste.
Regulations Impacting the Chemical Industry

• As you can gather from these slides, the U.S. chemical industry is heavily regulated by many agencies and new regulations are continually being introduced.

• SOCMA works to make sure that new regulations are reasonable and not overly burdensome on industry given the risk they are addressing.