

Industrial Compliance Group, Inc.

Today's Training Session:

Toxics Use Reduction Act Process Characterization 310 CMR 50.44

Your Instructor's Name Is:

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Introduction To The Regulatory System

Community
Right to Know

SARA

Employee
Right to Know

OSHA

Hazardous
Waste

RCRA

Shipping
Hazardous Materials

DOT /

~~DOT~~
DHS-CERCLA

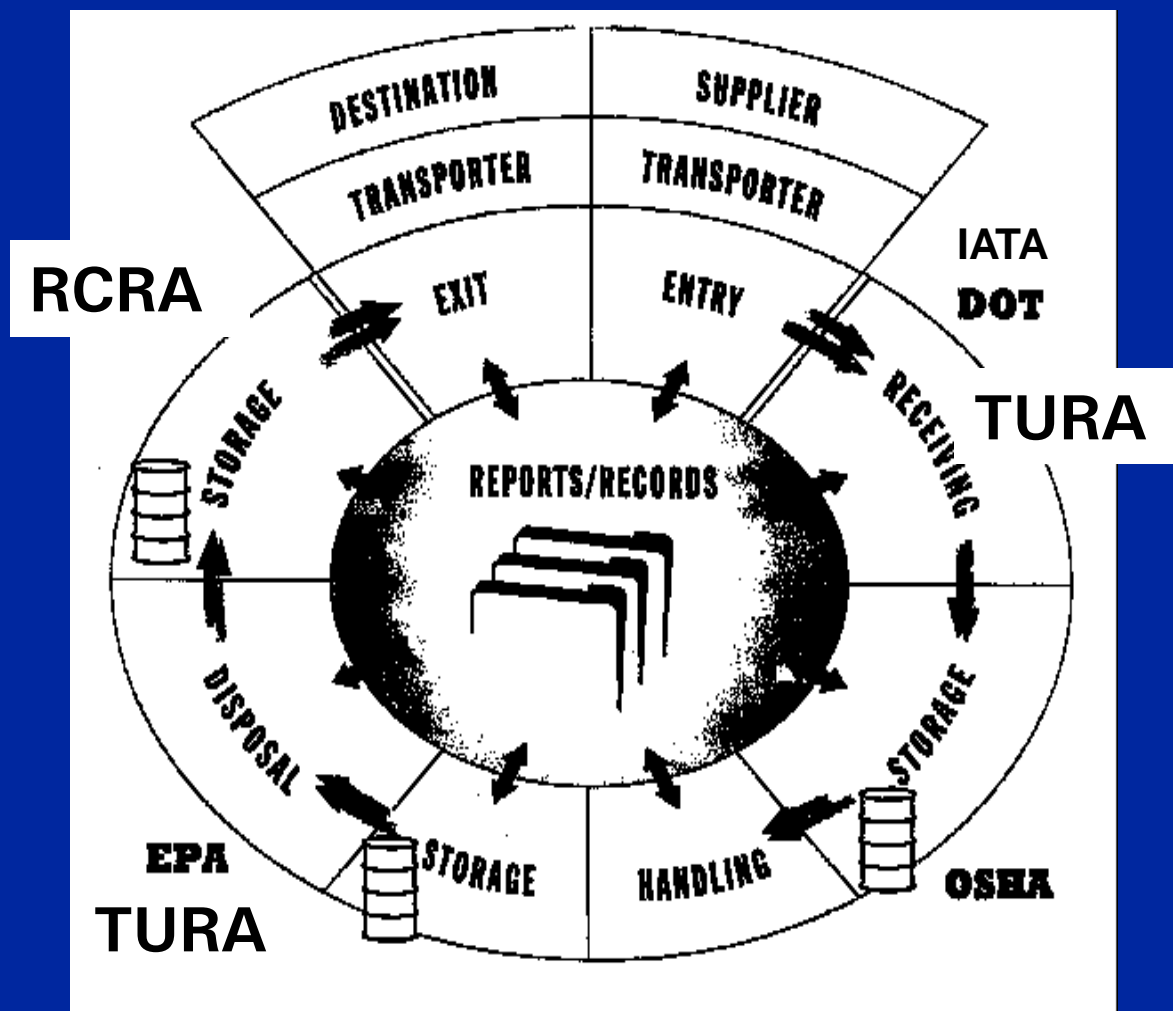
TURA can help!

Both deal with:

- On-Site Quantities, and
- Concentrations

Hazard Disclosure Required
for
Virgin Chemicals and Hazardous Waste

Chemical Management Life Cycle



TURA Process Characterization

- ◆ **What does Process Characterization mean?**
- ◆ **What is a Process?**

- ◆ **What are our objectives today:**
 - **Develop a visual representation of a production process**
 - **Assess a production process and determine the best way to divide it up into Production Units**

TURA Process Characterization

- **Conduct a chemical pathway analysis of a process**
- **Distinguish between products, processes, and Production Units**
- ◆ **Process characterization is concerned with Production Unit level information.**
- ◆ **TURA requires companies to conduct a Process Characterization of each Production Unit (see 310 CMR 50.44).**

TURA Process Characterization

- ◆ There are three steps to completing a process characterization:
 - Process Mapping - Process Flow Charting (Process Flow Diagrams)
 - Production Unit Information - cataloging all of the steps in a given process
 - Materials Accounting - what goes in WILL come out in one form or another . . . unless
 - » It is transformed or destroyed!

TURA Process Characterization

- ◆ **A process characterization must be done for each Production Unit, and must include the following:**
 - **Process flow diagram**
 - **Statement defining the purpose of the chemical(s)**
 - **Definition of the Product (how measured)**
 - **Description of the Production Unit (PU)**
 - **Definition of the Unit Of Product (UOP)**
 - **Materials Accounting**

TURA Process Characterization

Process Mapping - Process Flow Diagrams

- ◆ TURA requires that a process flow diagram be developed for each Production Unit.
- ◆ The Process Flow Diagrams must include:
 - All steps required to make the product
 - All inputs and outputs - i.e., raw materials, chemicals, water, steam, air pressure, etc.
 - Regarding chemicals - manufactured, processed or otherwise used
 - » Don't forget, Import = Manufactured!

TURA Process Characterization

- ◆ Also, the process flow diagram used in TUR planning should pay special attention to several steps often neglected in traditional process flow diagrams, such as:
 - Materials storage and handling
 - Equipment maintenance and repair
 - Byproducts released to the environment as fugitive emissions, spills and leaks

TURA Process Characterization

- ◆ You may be able to take advantage of other types of flow diagrams in your facility, but **ONLY** as a starting point:
 - Vendor-supplied operating manuals
 - Process engineer's layout diagrams
 - Architect's facility plans
 - Piping and instrument diagrams (P&ID)
 - Critical path management diagrams
 - Work flow diagrams

TURA Process Characterization

Chemical Pathway Analysis

- ◆ The movement of each toxic through the Production Unit.
- ◆ It involves tracing the flow of each toxic material from the point of introduction into the Production Unit through to the point it exits from the Production Unit, either as a product, byproduct or emission.

TURA Process Characterization

- ◆ Depending on the process or processes, an input may branch in two or more directions.
- ◆ Depending on the process or processes, the input may terminate at a particular step in the process or may continue through the process until waste treatment, hazardous waste shipment, becoming air emissions or becoming a product.

TURA Process Characterization

Defining the Product

- ◆ **A product is the outcome of a production process, and may take on different forms and can be:**
 - **A “Byproduct” as “Product” if used without further treatment:**
 - » **Examples: Concrete Blocks from Mix-Truck Washouts, Fertilizer from Wastewater Treatment Sludge, etc.**

TURA Process Characterization

- A “Family of Products”:
 - » Examples: Latex Paints, Nitrile Gloves, Roles of Colored Copper Cable, etc.
- An “Intermediate Product”:
 - » Examples: Manufactured Benzene Compounds for later use as Feed Stock for Pharmaceuticals, Chemical Synthesis, etc.
- A “Desired Result or Family of Desired Results”:
 - » Examples: Etched Metal, Carbonized Metal Surface Treatment (Hardening), Cleaned Garments, Plated Parts (Plastic or Metal), etc.

TURA Process Characterization

Defining the Production Unit

- ◆ **There are three important characteristics of a Production Unit:**
 - **The use of one or more listed toxic chemicals**
 - **The production process or processes**
 - **The product or products**

TURA Process Characterization

Defining the Production Unit (Con't)

- ◆ A process line, method, activity, or technique or a combination or series thereof, used to make a product
- ◆ Process or group of processes regarded as a distinct entity for the purpose of TUR Planning, that can be captured in a Process Flow Diagram
- ◆ A single chemical may be used in one or more Production Units

TURA Process Characterization

- ◆ **How should waste treatment units be handled?**
 - **Under the TUR regulations, unless waste treatment units are integral to a production process, they do not need to be a part of the Production Unit.**
 - **Chemicals used in a waste treatment unit, e.g., a wastewater treatment plant, are not apportioned back to Production Units, but rather are reported under “Facility Wide Usage”. These typically become a “Dummy Production Unit” in order to capture “Facility Wide Use” of a covered toxic.**

TURA Process Characterization

Defining the Unit Of Product

- ◆ A measure that reflects the level of production OR activity associated with use of the toxic OR generation of toxic as byproduct.
- ◆ Toxics Use Reduction must be normalized against the level of production.
- ◆ Select a Facility measure (Product or Intermediate) that closely reflects the actual Products of the business.

TURA Process Characterization

- ◆ Remember . . . it's a unit of Product, not of toxics use!

- ◆ Good examples of units of product are:
 - Gallons of paint manufactured
 - Square centimeters of jewelry plated
 - Pounds of nails manufactured
 - Pounds or 100 pounds of cleaned clothes
 - Semiconductor units produced or wafer starts

TURA Process Characterization

- ◆ **In choosing a Unit Of Product, the relative question should be:**
 - **Is the magnitude of chemical use and byproduct generation per Unit Of Product relatively constant for all products and production levels within the Production Unit?**
 - **If the answer is yes, then the Unit Of Product should serve as a reliable standard for measuring TUR progress.**

TURA Process Characterization



Massachusetts Department of Environmental Protection
Bureau of Air & Waste - Toxics Use Reduction Report

Form S Cover Sheet

Section 4: Facility-Wide Description of Production Units

a. Production Unit #

h. Check the appropriate description for the unit of product:

area dollar hours kilowatt length

Not a good choice! It is a constant variable!

N/A number volume weight

Use for Dummy PU for Waste Treatment! There is no UOP!

TURA Process Characterization

Conducting a Walk-Around

- ◆ **As a first step and in preparation for the Walk-Around, conduct pre-site visit research on the facility – TURI Data (better known as the DEP Data Release), TRI P2 Website, Envirofacts, MassDEP Website for ACOPs, etc.**
- ◆ **This is true if you are a consultant or company employee, especially NEW Limited TUR Planners!**

TURA Process Characterization

- ◆ Assemble your TUR Team and hold an opening meeting with key personnel – Don't forget HR and Purchasing.
- ◆ Especially if you are NEW, this gives you the perfect opportunity to get to know the employees, and to find out what they know.
- ◆ Ask questions and let them tell their story:
 - How long they have been at the company
 - What have they been able to do regarding Toxics Use Reduction or to maximize efficiency

TURA Process Characterization

- **What are some of the obstacles they see in moving TUR forward**
 - **What advice do they have for you going forward**
 - **Ask for a list of all previous TUR Options Implemented and TUR Options Rejected**
 - » **Remember . . . any previously rejected TUR Options MUST be revisited during the next 2-year TUR Planning cycle!**
- ◆ **Some of these people may become your best mentors if you let them**

TURA Process Characterization

- ◆ **After the initial meeting, conduct a walk through / tour of the operations and processes in the facility. This is a good place to start taking some notes AND start quick sketches of the Process Flow Diagram(s).**
- ◆ **You may discover that different employees have different views of the processes. This can help to bring unity, so that all are on the same page.**

TURA Enforcement Issues at Limited TUR Planner Facilities

My Personal Experiences

- ◆ **No TUR Plan available for review or very incomplete with missing sections**
- ◆ **Relying on checklist or outlines with “fill in the blanks” designed as tools, as the primary TUR Plan Update document:**
 - **In some cases the result is that after a few years, there is NOT even a TUR Plan at the facility anymore . . . just a lot of checklists with signatures!**

My Personal Experiences

- ◆ **Lack of backup information:**
 - **No Employee Notification in the TUR Plan**
 - **No documentation to substantiate that the TUR Team actually met or did anything during a TUR Plan Update cycle**
 - **No engineering calculation worksheets or purchasing records to substantiate chemical use data; including Use/UOP, Byproduct/UOP and Emissions/UOP**

My Personal Experiences

- ◆ **Lack of backup information (Con't):**
 - **No historical running list of TUR Options Chosen to be Implemented AND no running list of TUR Options NOT Chosen to be Implemented for Technical or Economic Reasons (THESE MUST BE REVISITED EVERY 2-YEARS!)**
 - **No Economic Evaluation for those TUR Options Chosen to be Implemented!**

TURA Process Characterization

Exercise:

- ◆ Review a brief summary of facility operations
- ◆ Work with the group at your table
- ◆ Review provided Process Flow Diagrams
- ◆ Your mission is to:
 - Add missing information
 - Correct mis-information
- ◆ Report findings – after all, TUR Planners ARE Auditors!
- ◆ Wrap-up discussion

TURA Process Characterization

Don't forget to fill out the surveys in your packages!

Thanks for coming! And thanks for allowing me to share my experiences with you today! Please let me know if you have any questions.

OK . . . now get out of here . . . it's lunch time!