Environmental Regulatory Summary for Safety Professionals

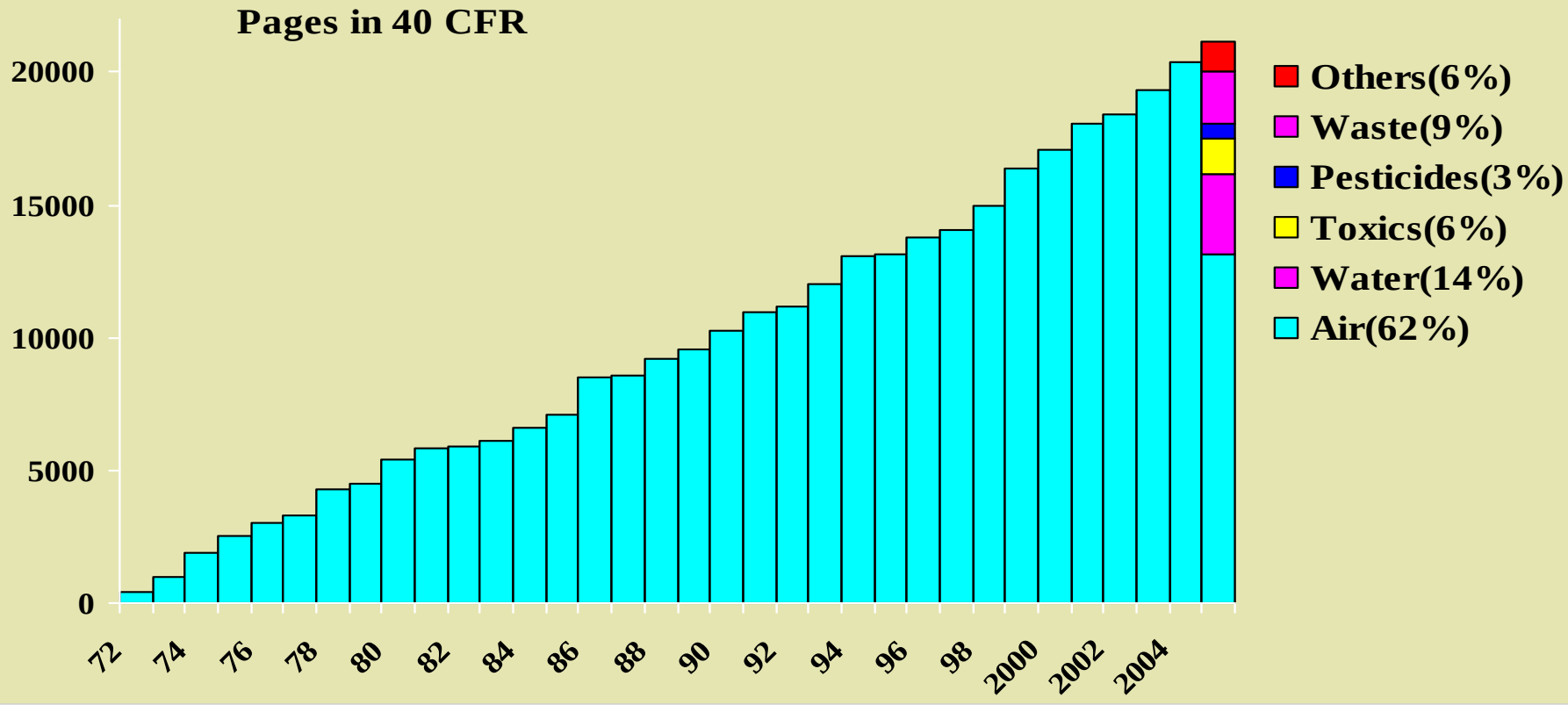
Delivering sustainable solutions in a more competitive world

ERM

1970 EPA Created

Growth of Environmental Regulations

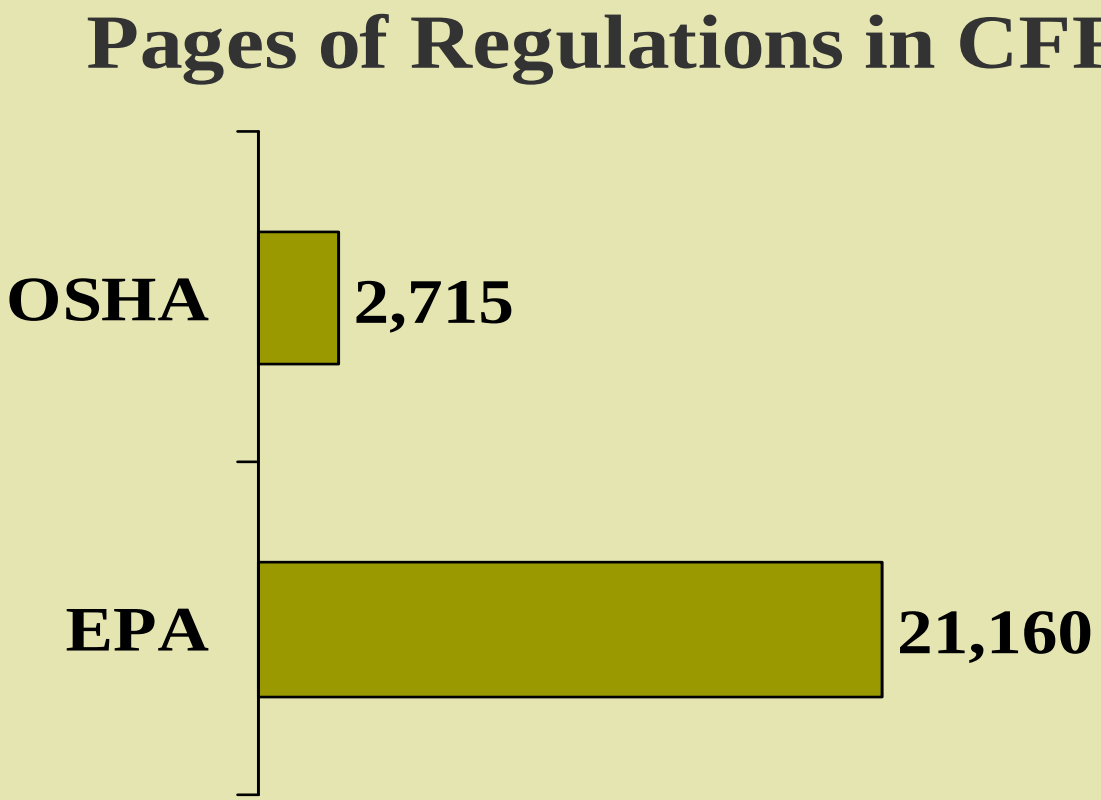
Over 21,000 Pages!!



EPA Laws and Executive Orders with Links

- Atomic Energy Act (AEA)
- Clean Air Act (CAA)
- Clean Water Act (CWA) (original title: Federal Water Pollution Control Amendments of 1972)
- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, or Superfund)
- Emergency Planning and Community Right-to-Know Act (EPCRA)
- Endangered Species Act (ESA)
- Energy Policy Act
- EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- EO 13045: Protection of Children From Environmental Health Risks and Safety Risks
- EO 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use
- Federal Food, Drug, and Cosmetic Act (FFDCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
- Federal Water Pollution Control Amendments - See Clean Water Act
- Marine Protection, Research, and Sanctuaries Act (MPRSA, also known as the Ocean Dumping Act)
- National Environmental Policy Act (NEPA)
- National Technology Transfer and Advancement Act (NTTAA)
- Nuclear Waste Policy Act (NWPA)
- Occupational Safety and Health (OSHA)
- Ocean Dumping Act - See Marine Protection, Research, and Sanctuaries Act
- Oil Pollution Act (OPA)
- Pollution Prevention Act (PPA)
- Resource Conservation and Recovery Act (RCRA)
- Safe Drinking Water Act (SDWA)
- Superfund - See Comprehensive Environmental Response, Compensation and Liability Act
- Superfund Amendments and Reauthorization Act (SARA) - See Comprehensive Environmental Response, Compensation and Liability Act
- Toxic Substances Control Act (TSCA)

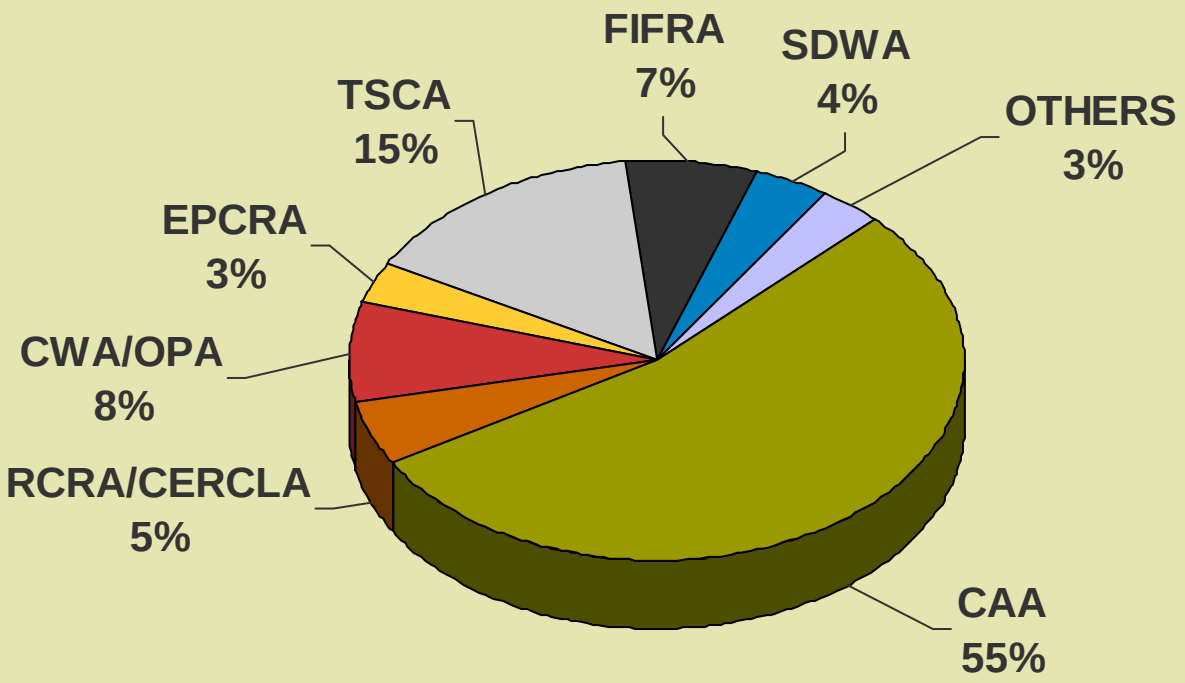
Comparing EPA/OSHA Regulations



EPA's Short-Term Agenda

(September, 2008)

275 Regs Under Development (OSHA - 8)!!!



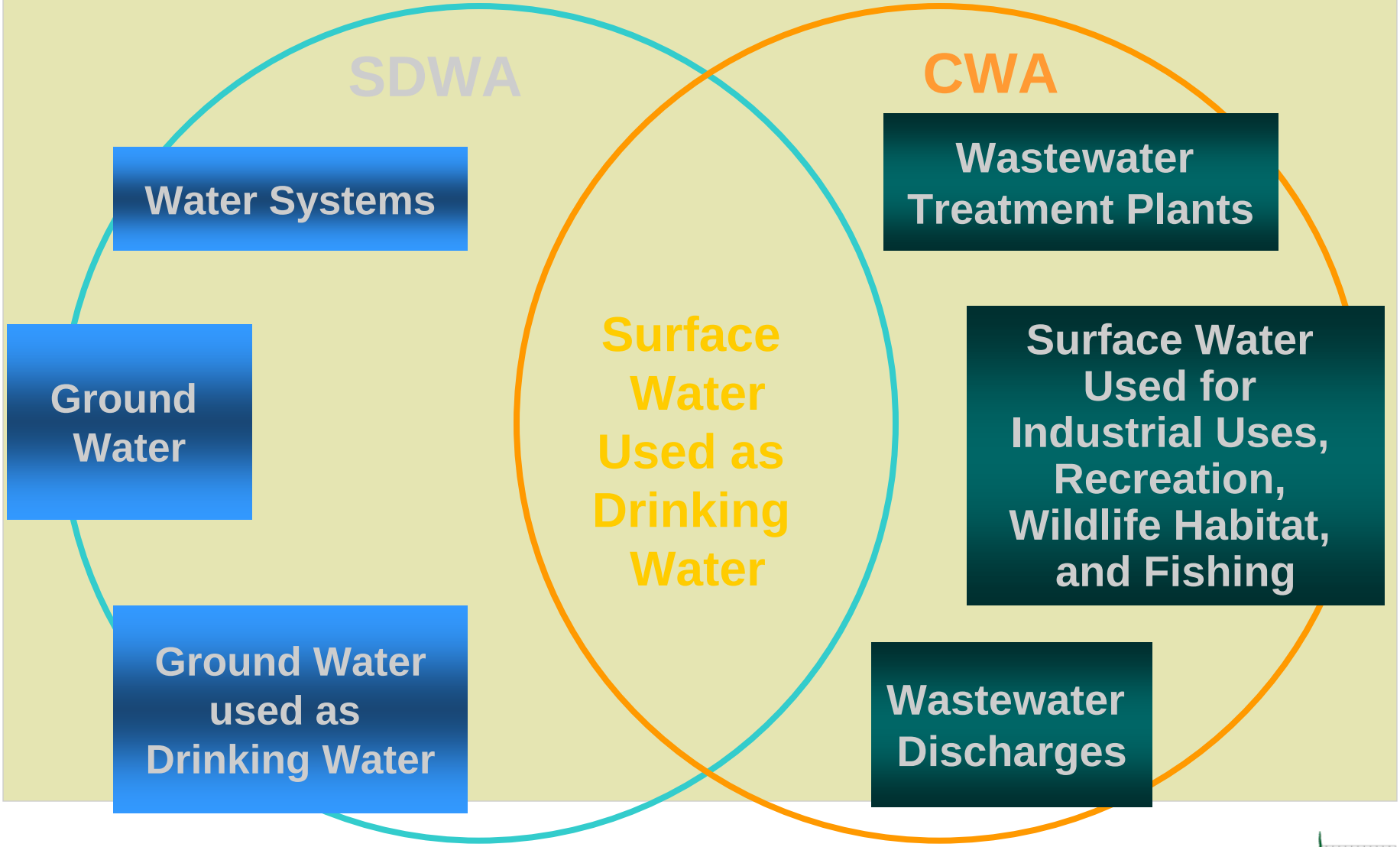
EPA Resources for This Group

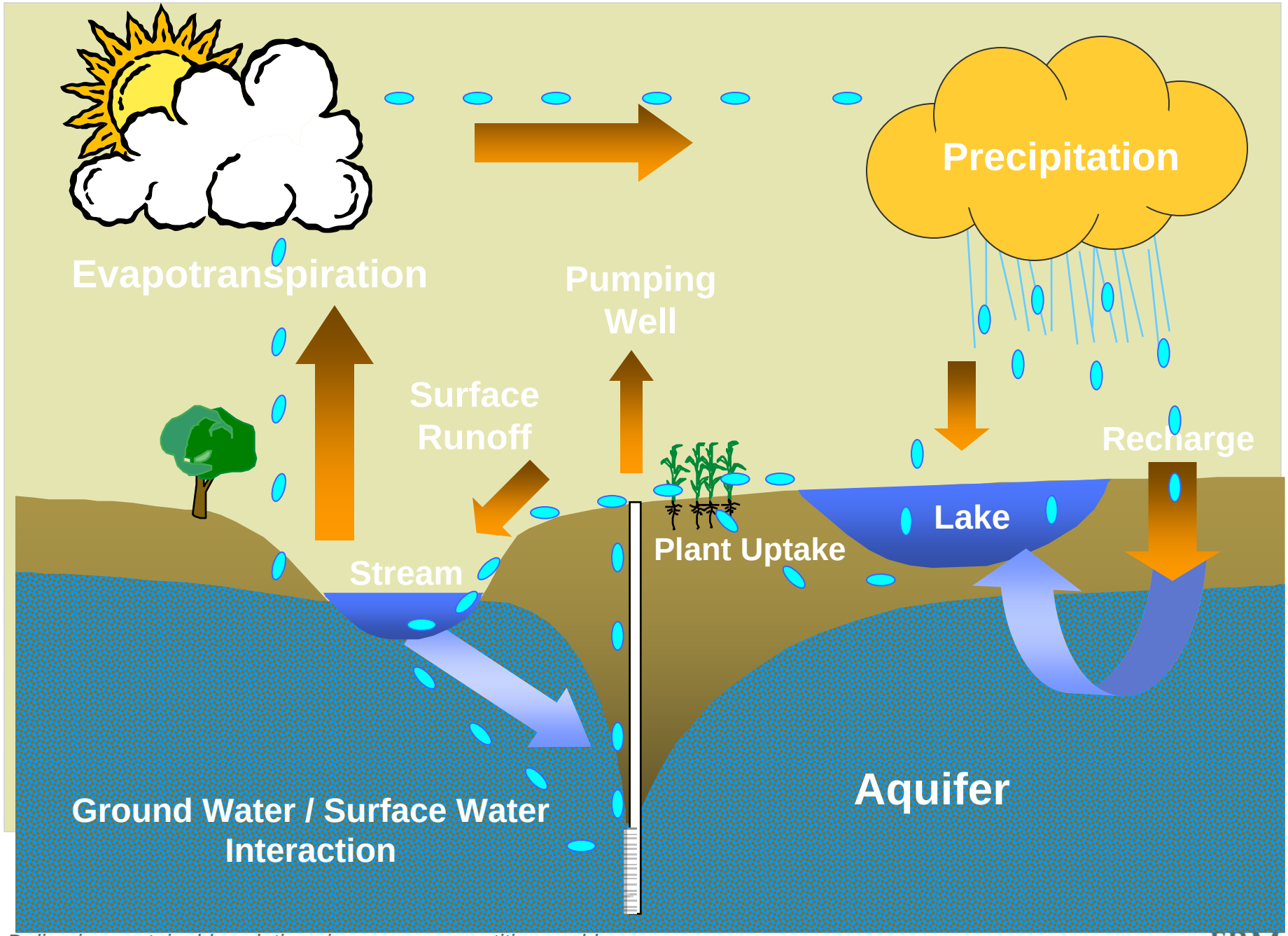
- **Municipal Sector**
  - http://www.epa.gov/lawsregs/bizsector/localgov.html
- **Agriculture**
  - http://www.epa.gov/lawsregs/bizsector/agriculture.html
- **Food Processing**
  - http://www.epa.gov/lawsregs/bizsector/food.html
- **Transportation**
  - http://www.epa.gov/lawsregs/bizsector/transportation.html
- **Chemicals**
  - http://www.epa.gov/lawsregs/bizsector/chemicals.html

Water, Wastewater and Stormwater

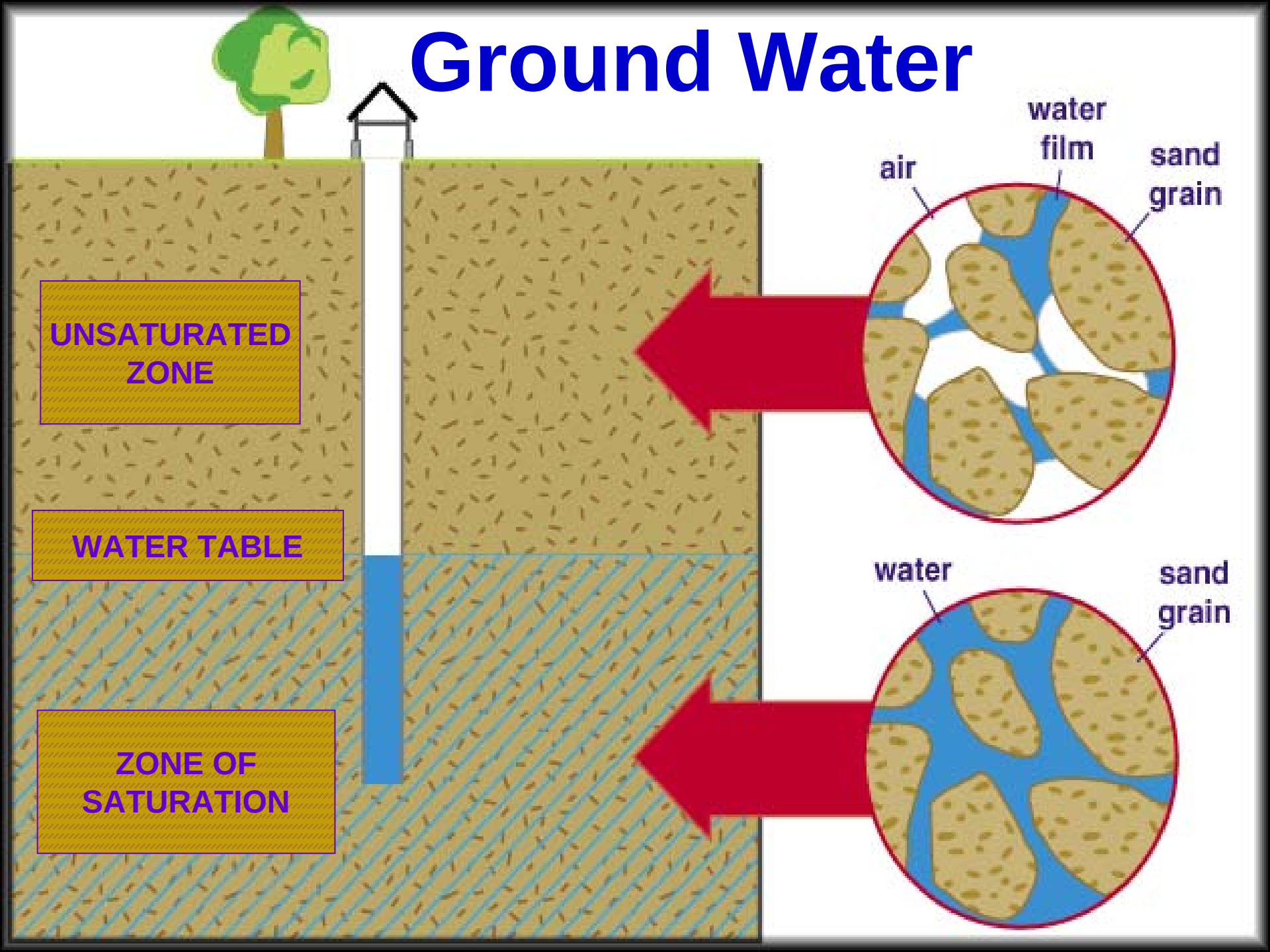
- **Clean Water Act**
- **Safe Drinking Water Act**

Two Major Water Statutes

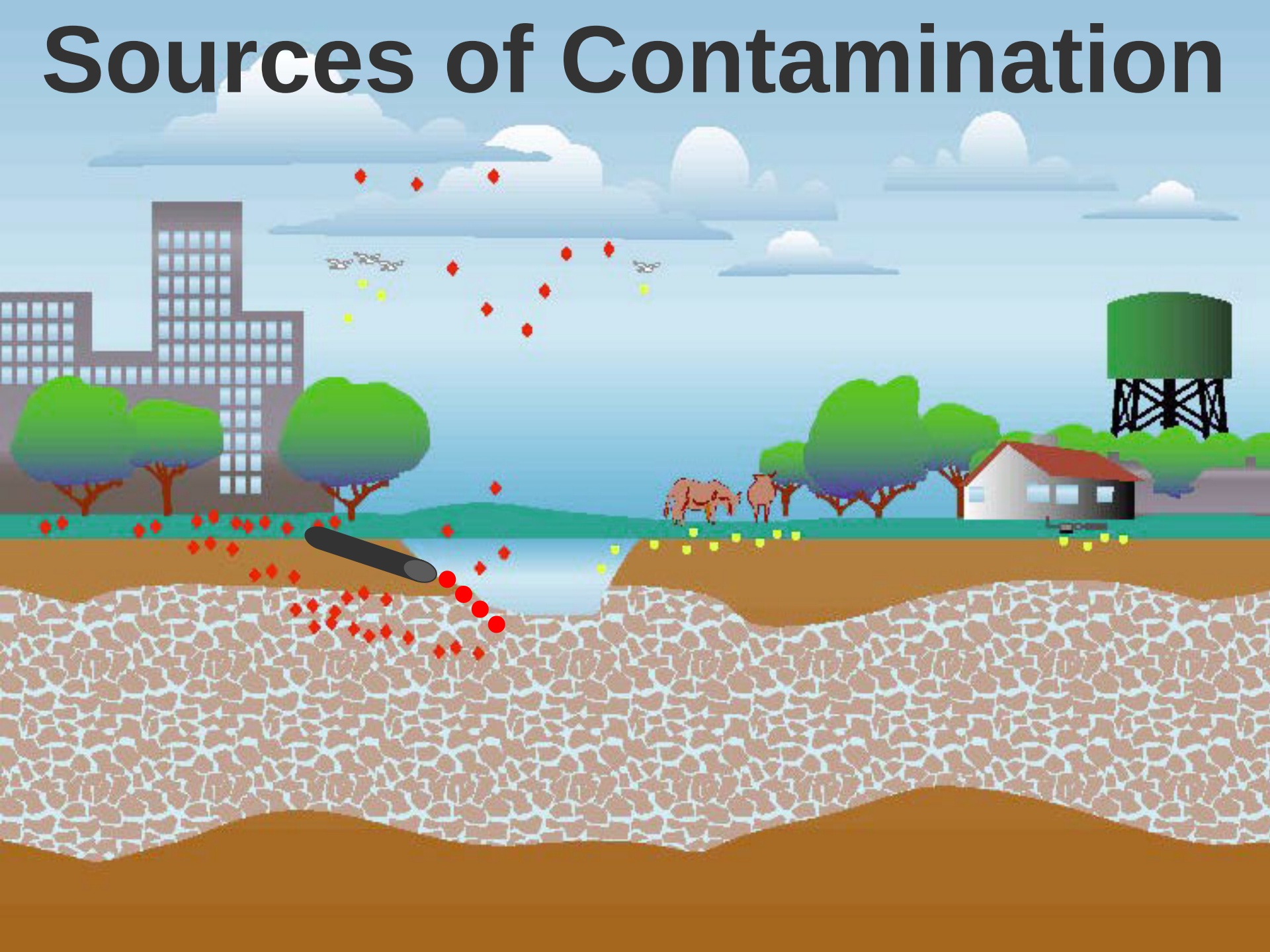



Precipitation
Evapotranspiration
Pumping Well
Surface Runoff
Recharge
Lake
Plant Uptake
Stream
Aquifer
Ground Water / Surface Water Interaction

Ground Water



Sources of Contamination



National Pollutant Discharge Elimination System (NPDES) Summary

- **Water pollution degrades surface waters making them unsafe for drinking, fishing, swimming, and other activities. As authorized by the Clean Water Act, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.**
- **Point source is also defined very broadly and means any discernible, confined and discrete conveyance, such as a pipe, ditch, channel, tunnel, conduit, discrete fissure, or container. It also includes vessels or other floating craft. Also includes concentrated animal feeding operations, Agricultural stormwater discharges and return flows from irrigated agriculture are not "point sources".**
- **NPDES permit program is administered by Washington and Oregon and many municipalities.**
- **Since its introduction in 1972, the NPDES permit program is responsible for significant improvements to our Nation's water quality.**

NPDES Summary

- **Clean Water Act prohibits anybody from discharging "pollutants" through a "point source" into a "water of the United States" unless they have an NPDES permit.**
- **Pollutant is defined very broadly and includes any type of industrial, municipal, and agricultural waste discharged into water. Some examples are dredged soil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste. By law, a pollutant is not sewage or discharges incidental to the normal operation of an Armed Forces vessel, or water, gas, or other material injected into an oil and gas production well.**
- **The need an NPDES permit depends on where you discharge pollutants. If you discharge from a point source into the waters of the United States, you need an NPDES permit. If you discharge pollutants into a municipal sanitary sewer system, you do not need an NPDES permit, but you should ask the municipality about their permit requirements. If you discharge pollutants into a municipal storm sewer system, you may need a permit depending on what you discharge. You should ask the NPDES permitting authority.**
- **Conditions in NPDES permits are enforced by EPA and the states and municipalities through self reporting and inspections.**

NPDES Stormwater

- **The National Pollutant Discharge Elimination System (NPDES) Stormwater Program regulates stormwater discharges from three potential sources:**
  - Municipal separate storm sewer systems (MS4s),
  - Construction activities, and
  - Industrial activities.
  - Most stormwater discharges are considered point sources, and operators of these sources may be required to receive an NPDES permit before they can discharge.
  - Permitting mechanism is designed to prevent stormwater runoff from washing harmful pollutants into local surface waters such as streams, rivers, lakes or coastal waters.

NPDES Stormwater

- **Polluted stormwater runoff is commonly transported through Municipal Separate Storm Sewer Systems (MS4s), from which it is often discharged untreated into local water bodies. The NPDES Stormwater Program covers the following types of stormwater discharges:**
  - MS4s Operators of large, medium and regulated small MS4s may be required to obtain authorization to discharge stormwater
  - Construction Activities Operators of construction sites that are one acre or larger (including smaller sites that are part of a larger common plan of development) may be required to obtain authorization to discharge stormwater under an NPDES construction stormwater permit. Where EPA is the permitting authority, operators must meet the requirements of the general permit
  - Industrial Activities - Industrial sectors may require authorization under an NPDES industrial stormwater permit for stormwater discharges. Where EPA is the permitting authority, operators must meet the requirements of a multi sector general permit. Industrial Permits are issued based on Standard Industrial Classification (SIC) number and exposure of materials or processes to precipitation or not issued based on a No Exposure Certification

Clean Water Act 404 Wetland Issues

- **The basic premise of the program is that no discharge of dredged or fill material may be permitted if:**
  - (1) a practicable alternative exists that is less damaging to the aquatic environment or
  - (2) the nation's waters would be significantly degraded.
- **When you apply for a permit, you must show that you have, to the extent practicable: Taken steps to avoid wetland impacts; Minimized potential impacts on wetlands; and Provided compensation for any remaining unavoidable impacts.**
- **Involves cooperation amongst EPA, U.S. Army Corps of Engineers, National Marine Fisheries Service, and U.S. Fish and Wildlife (no small task)**

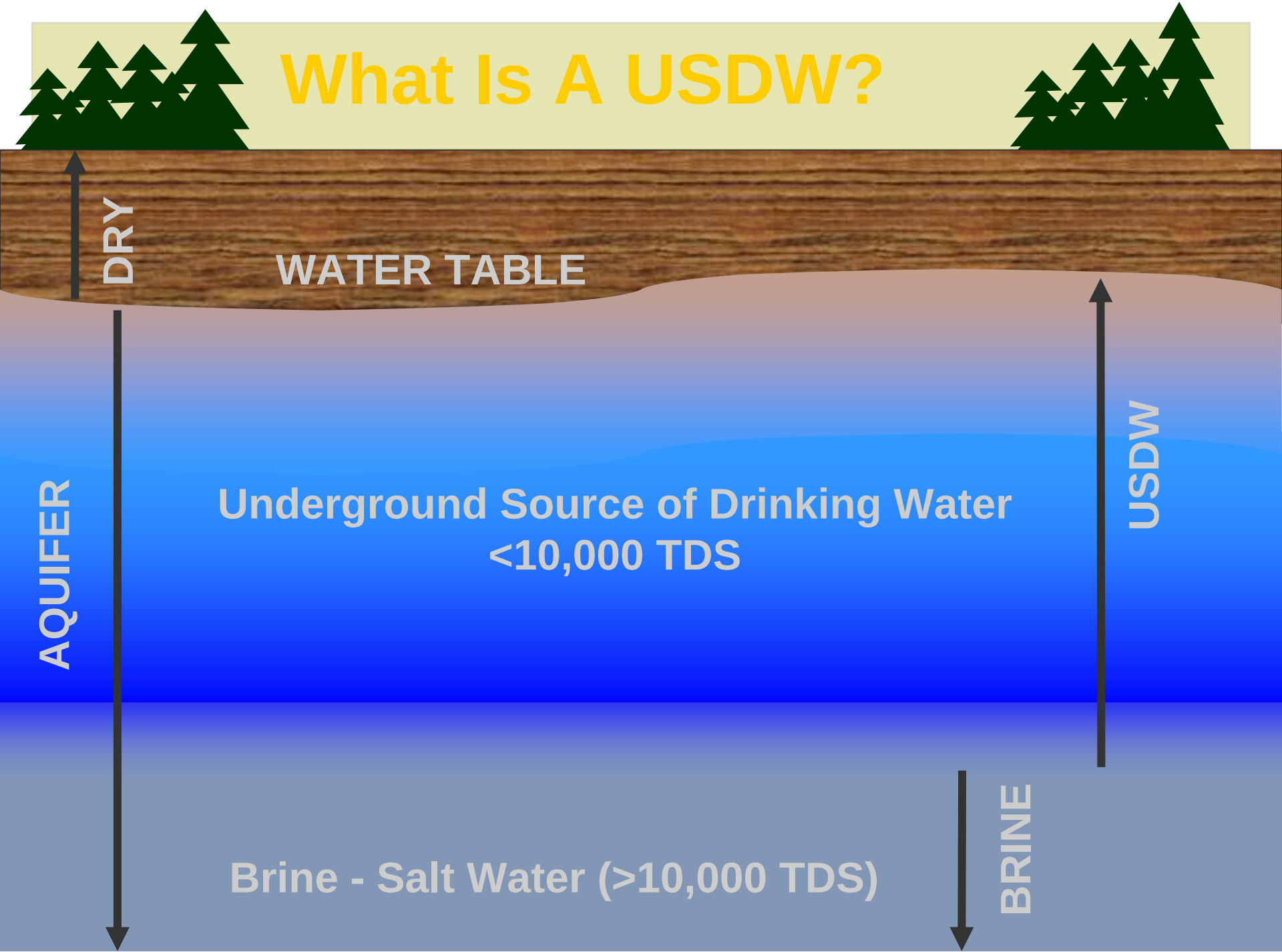
Sources of Drinking Water

- **Surface water**
- **Ground water**
- **Ground water under the direct influence of surface water**
- **Desalinated sea water**
- **Rain water**

Underground Injection Control Wells aka "Dry Wells"

- **UIC Permit program administered by Oregon and Washington**
- **Designed to protect underground sources of drinking water (USDW)**
- **Similar to but different from stormwater permitting program**

What Is A USDW?



Introduction to Air Quality

History of the Clean Air Act (CAA)

- **Established in 1970. Established National Ambient Air Quality Standards (NAAQS) and Gave States the Authority to Establish Their Own Rules Under State Implementation Plans (SIPs).**
- **Amendments of 1977. Established the Prevention of Significant Deterioration (PSD) Program for major new construction and major modifications.**
- **1990 Amendments. Called the most complex environmental statute ever written!**

1977 CAA – New Source Performance Standards NSPS

- **Establishes emission standards and regulatory requirements for over 70 types of sources**
- **Applicability dates based on manufacture date of equipment.**
- **Codified in 40 CFR 60.**
- **Industrial boilers (Subpart Dc); Storage tanks (Subparts Ka, Kb); Synthetic Organic Chemical Manufacturing (Subparts III, NNN), etc.**

1977 CAA – National Emission Standards for Hazardous Air Pollutants (NESHAP)

Established Emission Standards for 8 Initial Hazardous Air Pollutants

Codified under 40 CFR 61

- **Asbestos**
- **Arsenic**
- **Benzene**
- **Beryllium**
- **Mercury**
- **Phosphorus (Elemental)**
- **Radionuclide**
- **Vinyl Chloride**

Title II 1990 CAA – Mobile Sources

EPA Established Emissions Standards for Mobile Sources

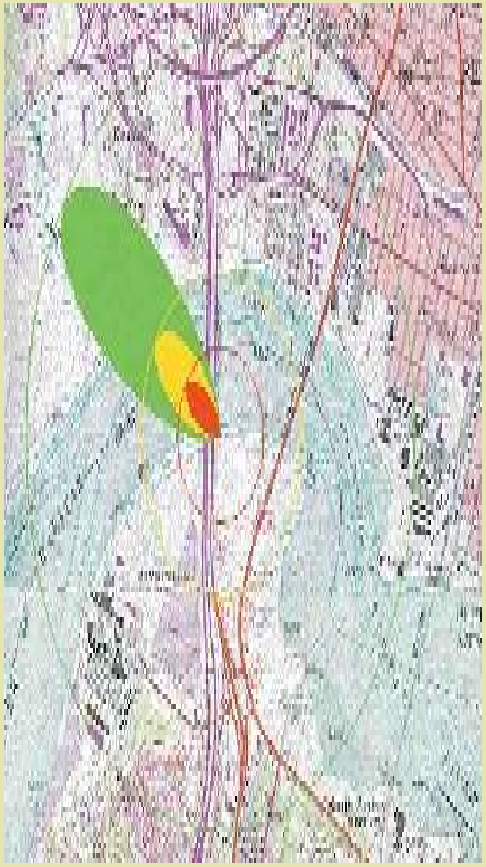
Title III (Section 112c) 1990 CAA – Hazardous Air Pollutants (HAPs) / MACT Standards

- **Created a list of 189 hazardous air pollutants that EPA deemed toxic.**
- **EPA established 96 source categories for major emitters of HAPs and developed Maximum Achievable Control Technology MACT standards (i.e. Pharmaceutical Manufactures, Misc. Metal Parts Coating, etc.)**
- **Major Source – 10 tons per year of a single HAP and 25 tons per year of all HAPs in aggregate.**
- **Also regulates certain "minor" or "area" sources (i.e. dry cleaners)**

Title III (Section 112r) 1990 CAA – Risk Management Plans (RMP)

- **Requires facilities that store certain quantities of regulated substances to develop a Risk Management Plan and to determine Off-Site Consequences from Accidental Releases.**
- **Regulates 77 toxic substances and 63 flammable substances in varying threshold trigger levels from 500 to 20,000 pounds of onsite storage.**
- **Has program tie-in with OSHA's Process Safety Management (PSM) Program**

http://yosemite.epa.gov/oswer/Ceppoweb.nsf



Title IV 1990 CAA – Acid Rain Provisions

- **Only applicable to Power Plants**
- **Regulates SO_2 emissions and establishes cap and trade program**
- **Complex continuous emission monitoring and recordkeeping**
- **Specific provisions would be written in Title V permit.**

Title V 1990 CAA – Operating Permit Program

- **Establishes national operating permit program for all major sources**
- **Major source defined as any facility with the Potential to Emit (PTE) of 100 tons per year or more of a criteria pollutant**
- **Major source threshold (i.e.100 tpy trigger) is lowered for non-attainment areas depending on classification (extreme, severe, serious, moderate)**
- **Required for all major sources of HAPs as defined in Title III**

Attainment Status of Area Where Source is Located	Potential to Emit (Tons/Year)						
	Carbon Monoxide (CO)	Lead (Pb)*	Nitrogen Dioxide (NO2)*	Nitrogen Oxides (NOx)	Particulate Matter (PM-10)	Sulfur Dioxide (SO2)*	Volatile Organic Compounds (VOCs)
Attainment Areas	100	100	100	100	100	100	100
Nonattainment Areas							
Marginal*				100			100
Moderate	100			100	100		100
Serious	50			50	70		50
Severe*				25			25
Extreme				10			10
Northeast Ozone Transport Region				50 - marginal 100- moderate			50 - marginal 100- moderate

* The Act did not establish additional major source classifications for these pollutants based on an area's attainment status.
* Nonattainment areas for carbon monoxide (CO) and particulate matter (PM-10) are classified as either moderate or serious.

Title VI 1990 CAA – Stratospheric Ozone Protection

- **Establishes phase out requirements for certain Ozone Depleting Substances (ODS) and bans the use of certain non-essential items**
- **Contains requirements for the maintenance and servicing of air conditioning systems**
- **Provides specific regulatory requirements for manufacturers and importers of ODS**

Climate Change

- **Regulations still being sorted out with a mix of international federal, state, and local priorities**
- **See Discussion on Priorities at end of day**
- **Washington and Oregon are both members of the Western Climate Action Initiative**

Greenhouse Gas Global Warming Primer

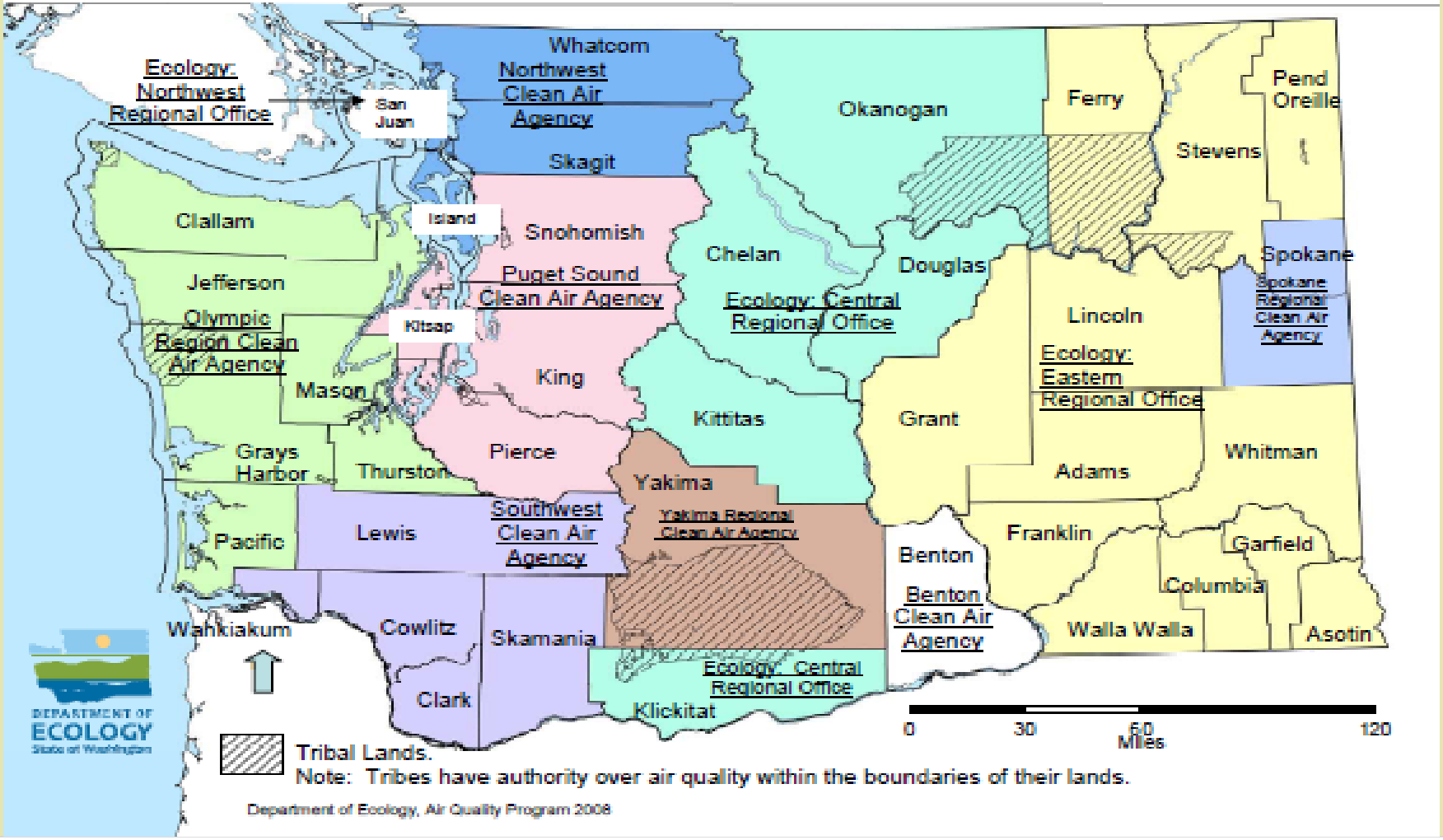
- **Global warming is the result of the greenhouse effect, which is the product of greenhouse gases.**
- **Water vapor is a greenhouse gas that rapidly circulates in and out of the atmosphere.**
- **The major greenhouse gas that humans are adding include**
  - Carbon dioxide, CO2.
  - Methane, CH4, which is around 20 times more powerful than CO2.
  - Nitrous oxide.
  - CFCs, as well as their replacement, HCFCs.
- **Roughly three-quarters of human-caused greenhouse warming comes from the burning of fossil fuels – coal, oil and gas.**

State / Local Regulations

All States, and many local districts, have there own air quality regulations. Most cover similar topic areas, however some agencies have very specific requirements. Oregon and Washington are different. Oregon has 1 Air District (Lane Regional in Eugene) and the DEQ controls the rest of state. Washington has many air districts and Ecology controls the rest of the state.

- **Visible Emissions – Opacity**
- **Fuel Burning Limitations**
- **General Industry Process Weight Rate Limitations**
- **Industry Specific Requirements (different industry types)**
- **Fugitive or Nuisance Dust**
- **Toxic Air Pollutant Regulations**
- **Air Modeling Requirements**

Washington Air Districts



New Construction

EPA defines physical on-site construction to refer to "placement, assembly, or installation of materials, equipment, or facilities which will make up part of the ultimate structure of the source."

Placement of footings, pilings and other materials needed to support the ultimate structures clearly constitutes on-site construction.

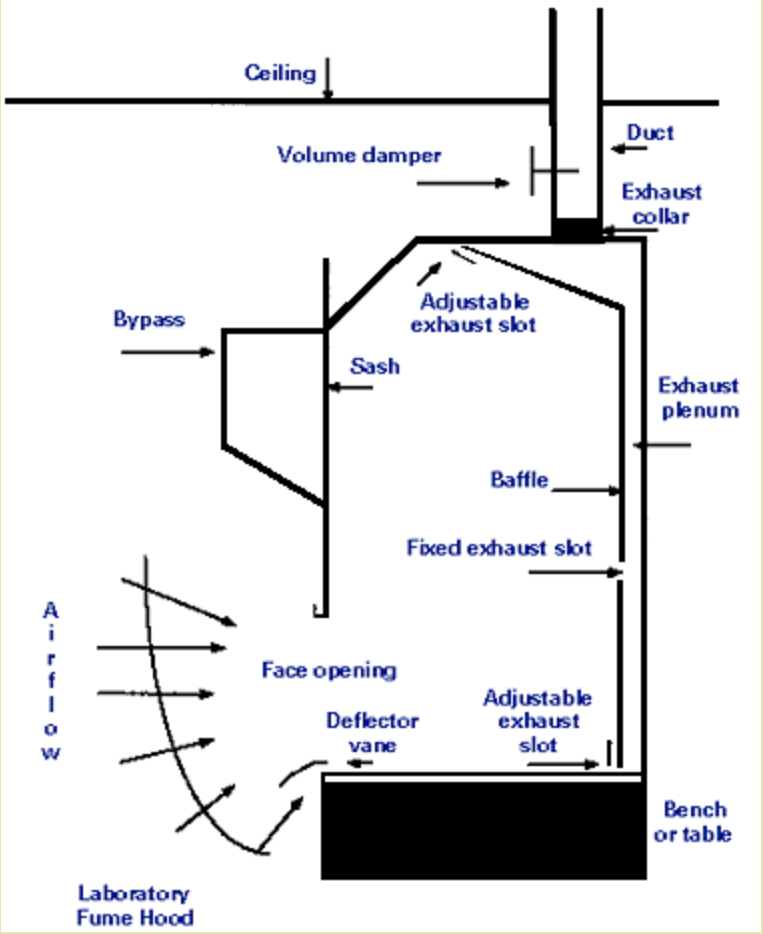
Visible Emissions

Visible Emissions – Fugitive Dust

Most State regulations contain provisions for minimizing fugitive dust or dust that would cause a nuisance to the general public.

Collection/Capture Systems

- **Hoods and Enclosures**
- **Canopies**
- **Total Enclosures**



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Collection/Capture Systems Inspection Basics

- **Proximity of hood and any associated baffles to actual emission source**
- **Is the hood operating at a negative pressure?**
- **Physical condition of hood. Any holes or gaps?**
- **Face velocities (approximately 100-200 fpm fumes / 500 or more for PM)**
- **Are cross drafts present?**
- **Total enclosures – EPA Method 204 evaluation**

Air Pollution Control Devices

- **Baghouses / Dust Collectors**
- **Mechanical Collectors / Cyclones**
- **Scrubbers – Wet and Dry**
- **Carbon Adsorbers**
- **Thermal Oxidizers**
- **Flares**
- **Electrostatic Precipitators (ESP)**

Baghouses / Dust Collectors

- **Are the most common form of Particulate Matter (PM) emission control.**
- **PM is collected in a series of filter banks or bags through a “dust cake”.**
- **Main design characteristics are “air to cloth ratio” and classification of bag material (i.e. fiberglass, Teflon, Nomex etc.)**

Baghouses / Dust Collectors Operating Principles

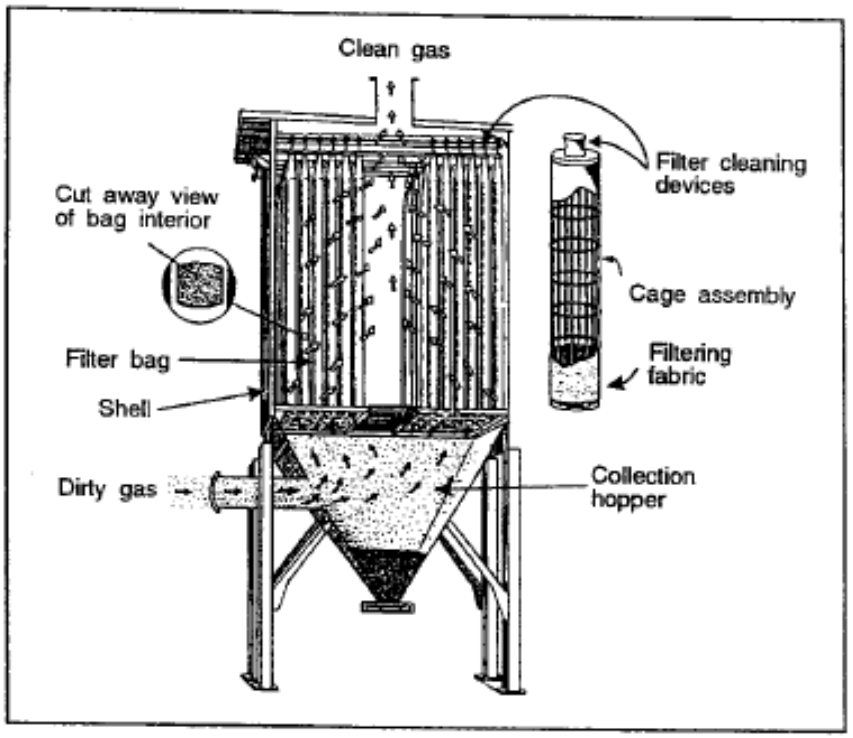


Figure 4-1. Baghouse

Baghouse Inspection Basics…

- **Look at pressure drop gauges. Are they functioning? Are they within the prescribed range?**
- **Is housing in good condition? Rusting or holes present? Do you hear air rushing into the unit?**
- **Are cleaning cycles constant and consistent (view pressure drops)?**
- **Is there a bag break indicator?**
- **Preventive Maintenance (PM) records and bag change schedules.**

Mechanical Collectors / Cyclones

- **Two main types – Large Diameter Collectors and smaller diameter “multi-clones”.**
- **Use centrifugal forces to collect Particulate Matter (PM).**
- **Used in industry were you have larger particles (> 50 microns) – wood products, material transfer operations, coal-fired boilers, etc.**

Mechanical Collectors / Cyclones Operating Principles

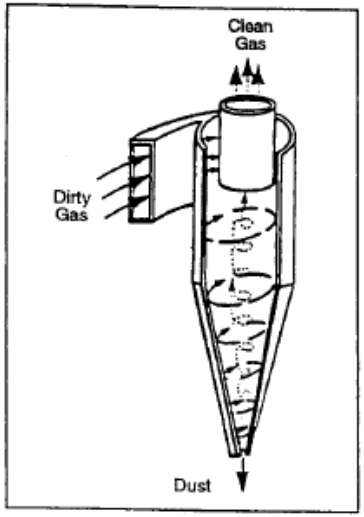


Figure 7-5. Single, Tangential-Entry, Large-Diameter Cyclone

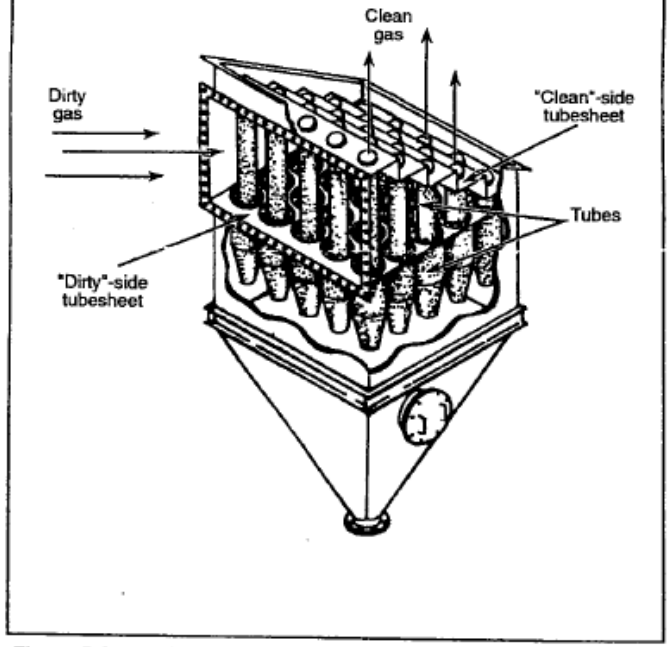


Figure 7-6. Typical Multicyclone With Axial-Entry Cyclones

Mechanical Collectors / Cyclones Inspection Basics

- **Look a pressure drop gauges. Are they functioning? Are they within the prescribed range?**
- **Is housing in good condition? Rusting or holes present? Do you hear air rushing into the unit?**
- **Are there dents or weld failures in the cyclone housing?**
- **Is there particulate "fallout" at stack exit point?**
- **Deposits on inside surfaces or in stack exhaust.**

Flares

- **Basic organic vapor burn-off device (type of incinerator).**
- **Often seen at refineries, terminals, chemical facilities.**
- **Some are flameless, “smokeless”, and some are enclosed so you don’t see the flame**

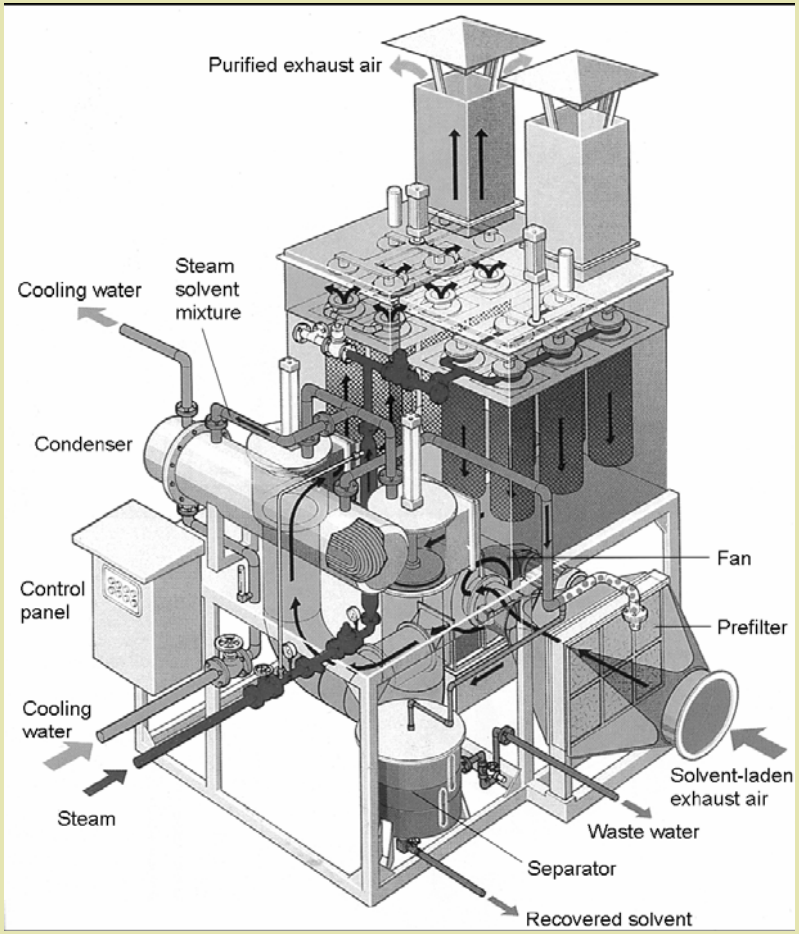
Flare Inspection Basics…

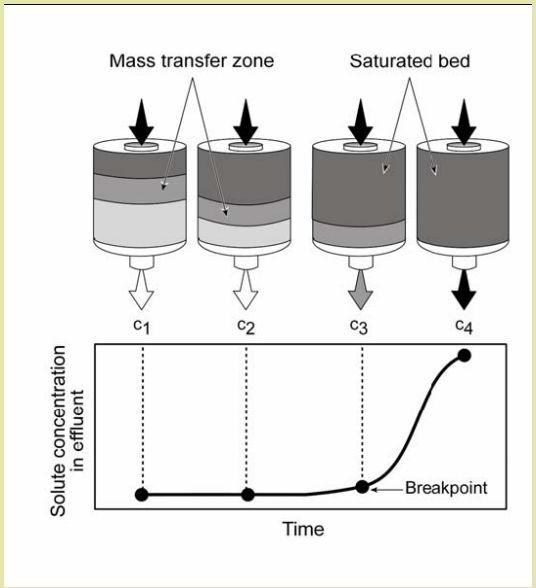
- **Presence of flame indicators**
- **Waste gas flow rate**
- **Visible emissions or black smoke from incomplete combustion**

Carbon Adsorption

- **Removal or organic vapors and fumes via physical adsorption using porous media (typically carbon)**
- **Can be non-regenerative or regenerative**
- **Other adsorption media include zeolites or molecular sieves, silica gels, activated alumina, etc.**

Carbon Adsorption Operation Principle





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Carbon Adsorption Inspection Basics…

- **Outlet concentration**
- **Review of adsorption /**
- **regeneration times**
- **Static pressure drop (indicator of plugging)**
- **VOC detector or analyzer calibration**
- **Determination of “breakthrough” procedure**
- **Solvent recovery rates as compared to baseline values**

Wet Scrubbers

- **Many different types: concurrent flow, counter-flow, packed bed, venturi, impingent plate.**
- **Used in control of gaseous emissions, acid gases, particulate, and volatile organic compounds**
- **May use water or neutralizing scrubbing liquid.**

Packed Tower Scrubber Operating Principles

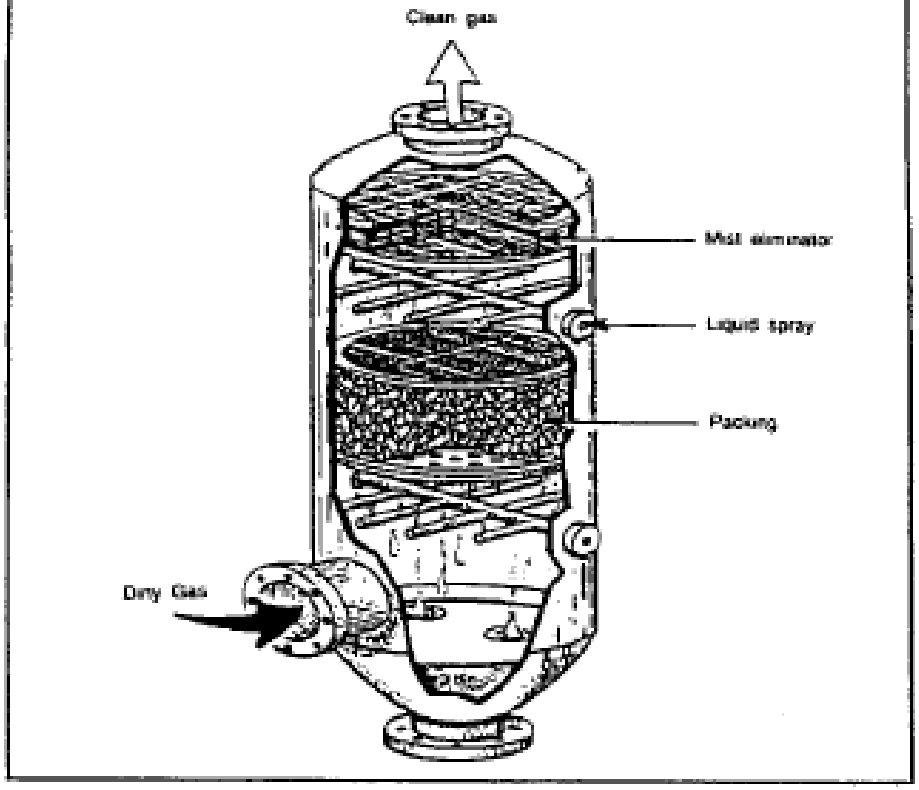


Figure 6-5. Countercurrent-Flow Packed Bed Scrubber

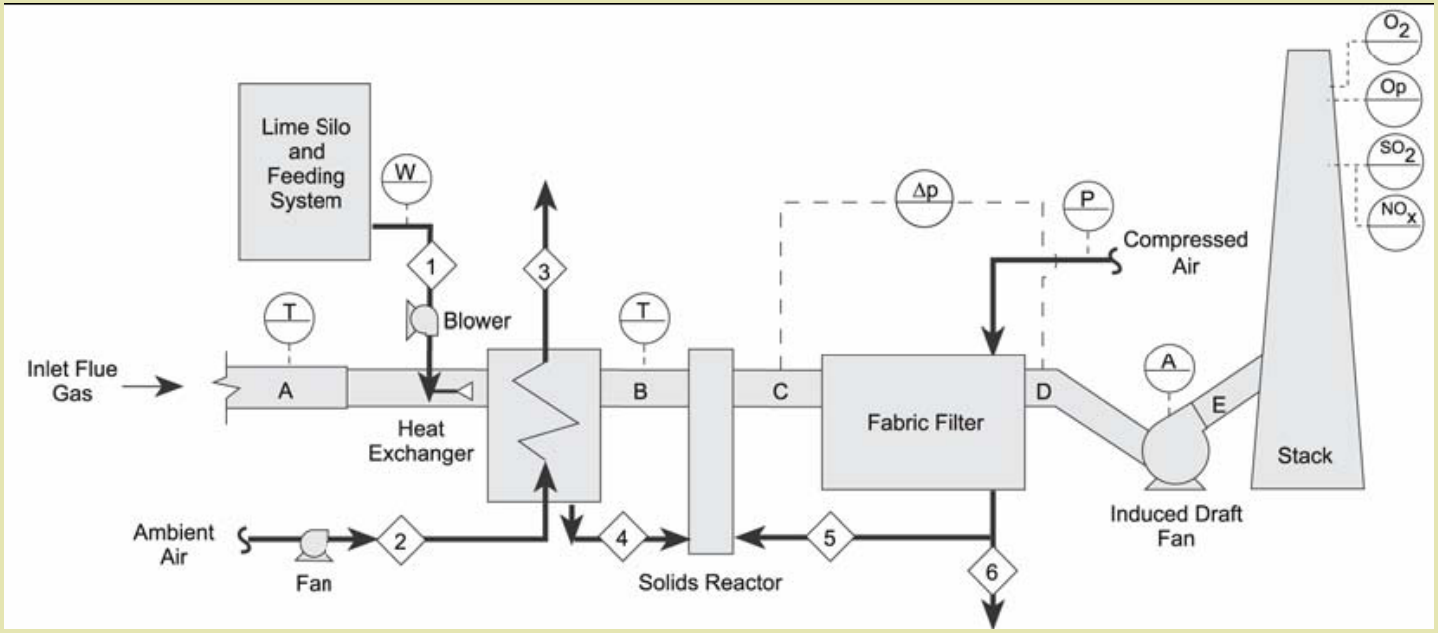
Wet Scrubber Inspection Basics

- **Liquid recirculation rates**
- **Liquid pH**
- **Static pressure drops**
- **Inlet and outlet temperatures**
- **Droplet re-entrainment – mud lip around stack, drainage pattern at discharge, discoloration of walls or roof**
- **Pump discharge pressures**
- **Internal components - physical condition of packing, demisters, solids accumulation, clogged spray nozzles**

Dry Scrubbers

- **Typical of acid removal applications (HCl, SO2)**
- **Alkalies (i.e. lime, etc.) are injected into discharge stream to neutralize acid gases.**
- **Usually followed by a mechanical collector, baghouse, or ESP.**

Dry Scrubber Operating Principles



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Dry Scrubber Inspection Basics

- **Alkali feed rate – Designs are based on certain stochiometric rates with a safety factor**
- **HCL is easier to remove than SO2 so typical feed rates vary depending on application**
- **Inlet and Outlet Gas Temperatures**
- **Ambient air infiltration and moisture can cause downstream control problems.**

Electrostatic Precipitators

- **Primarily used for Particulate Matter (PM) control from combustion sources (coal boilers, melting furnaces, etc.)**
- **Discharge electrodes and collection plates arranged in parallel rows. PM is charged and collected on plates, then rapped to a collection hopper.**
- **High voltage provided by transformer-rectifier (T-R) sets. With normally two to five sets per unit.**

Electrostatic Precipitator Operating Principles

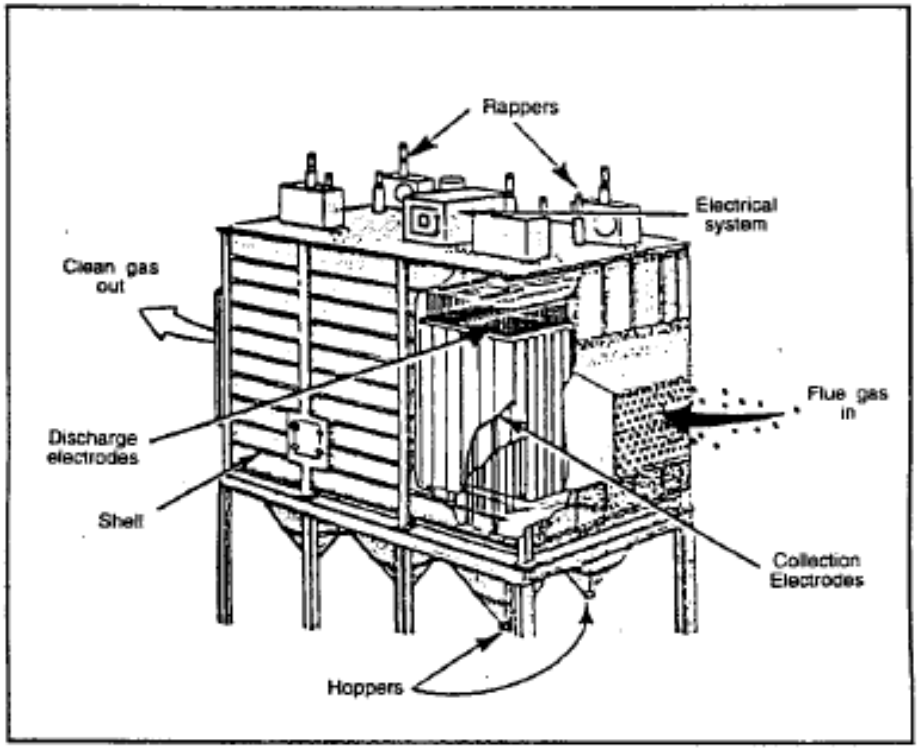


Figure 10-1. A Typical ESP

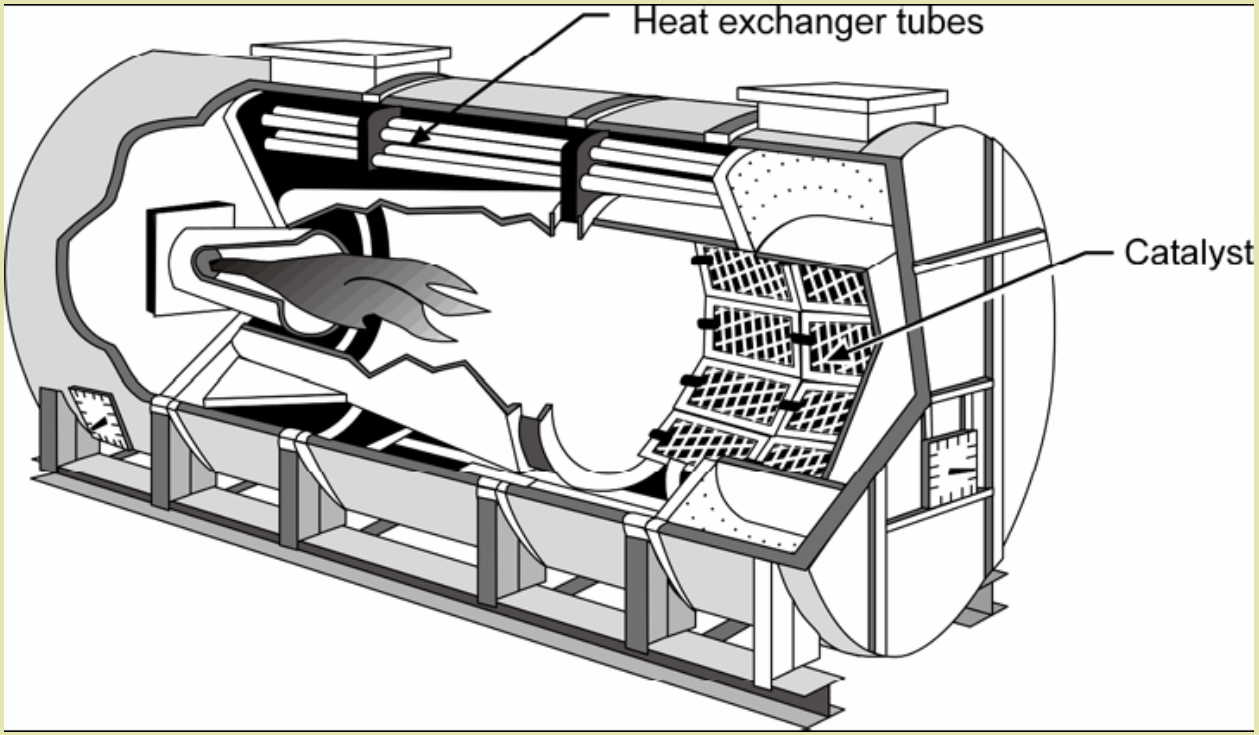
Electrostatic Precipitator Inspection Basics

- **Review primary and secondary voltages as compared to permit limits or manufacturer's recommendations.**
- **Is housing in good condition? Rusting or holes present? Do you hear air rushing into the unit?**
- **T-R set outages (tripping).**
- **Puffing during rapping cycles.**
- **Panel and electrode alignment**

Thermal Oxidizers

- **High destruction efficiencies for organic vapor and fumes via high temperature (1500^{o}F) gas oxidation**
- **Several types Regenerative, Recuperative, Catalytic, etc.**
- **Often seen with coating operations and used primarily for VOC and HAP control**

Thermal Oxidizers Operating Principles



Recuperative Catalytic Oxidizer (RCO)

Thermal Oxidizers Inspection Basics

- **Combustion chamber temperatures**
- **Catalyst change out data**
- **Inlet and outlet temperatures, especially for a catalytic oxidizer**
- **Shell physical condition and air infiltration**
- **Residence time (often hard to measure)**
- **Burner condition (internal)**

Continuous Emission Monitors (CEMS)

- **Mounted on stacks and emission outlets**
- **Very complex and require detailed checks, calibrations, spans, etc.**
- **Compare current operations with “baseline” conditions**
- **Verify that regulatory required checks, calibrations and spans were completed on time**
- **Check for percent “up time” / “down time” and access reliability**

Ozone Depleting Substances (ODS)

- **Defined in 40 CFR 82 as a "compound that contributes to stratospheric ozone depletion. Ozone-depleting substances (ODS) include CFCs, HCFCs, halons, methyl bromide, carbon tetrachloride, and methyl chloroform. ODS are generally very stable in the troposphere and only degrade under intense ultraviolet light in the stratosphere. When they break down, they release chlorine or bromine atoms, which then deplete ozone."**
- **Typical substance seen in industry is R-22.**

Ozone Depleting Substances Requirements - 40 CFR 82

- **Does facility maintain an inventory of all equipment containing ODS? Most common is R-22.**
- **Through visual inspection to any units have over 50 pounds of an ODS?**
- **Ask for service records on units containing any ODS. Must maintain service records and maintenance must be conducted by certified technicians.**
- **For any unit containing more than 50 pounds of an ODS, the facility must keep a leak rate calculation determined on a 12-month rolling average.**

Oil Spill Prevention and Spill Reporting

Spill Prevention

- **40 CFR 112**
- **Impacts many facilities (EPA estimates 570,000)**
  - Basic plans seen as a commodity item but can be entry work with a new client, can be a multi-facility sale, leveraging our footprint
- **ERM has extensive experience**
  - We can help with Integrated Contingency Plans – can be more valuable, easier to use and maintain

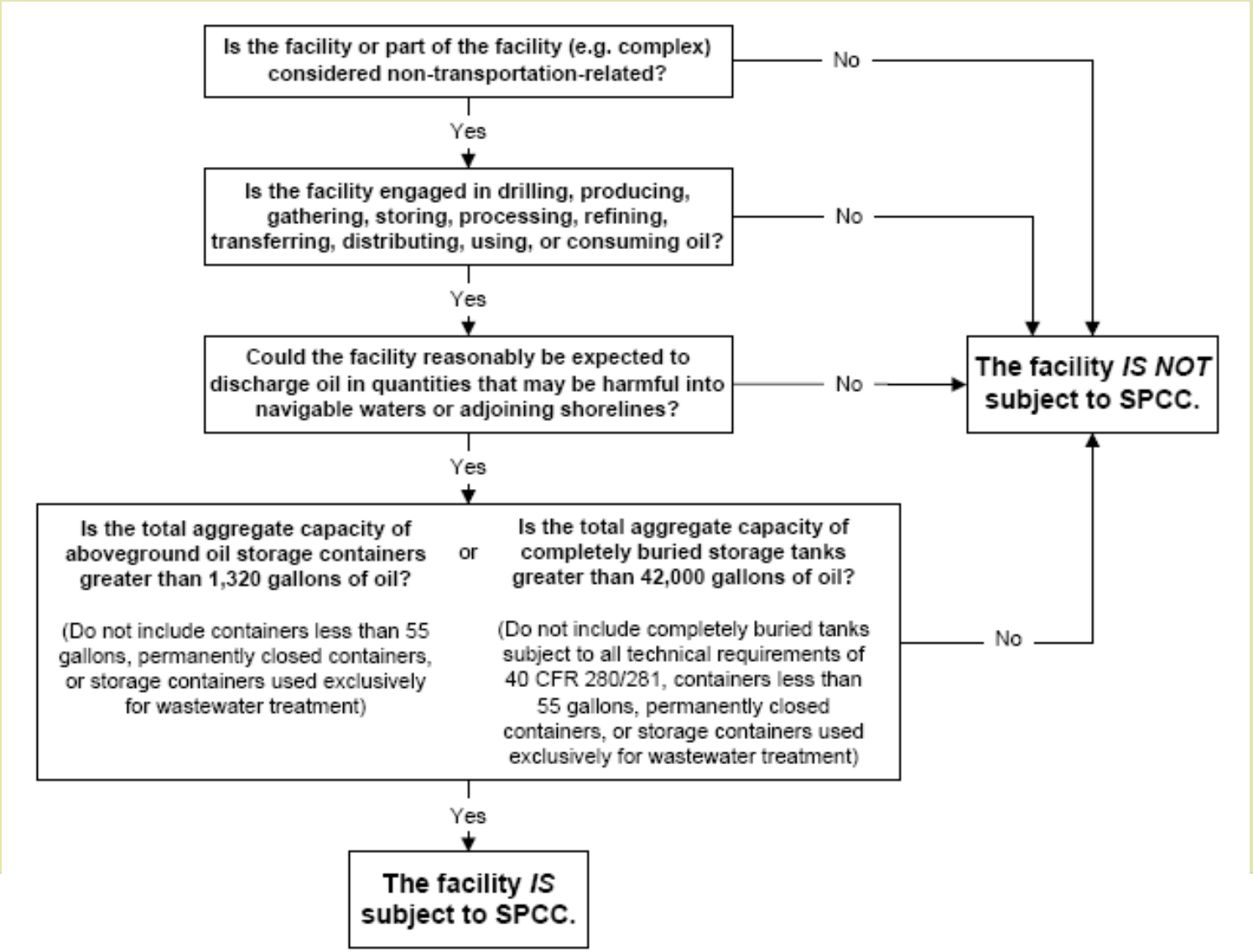
Regulatory Milestones

- **December 11 1973 - Original SPCC Rules**
- **1989 – Exxon Valdez**
- **1990 – OPA – Oil Pollution Act**
- **1991, 1993, 1997 – Major proposed rule revisions**
- **July 17 2002 – Major Technical Amendments - February 17 2003 plan update required.**
- **Litigation from API, Marathon, Petroleum Marketers Assn (PMAA)**
- **Plan update deadline extended to April 13 2003, then February 17 2004, then August 17 2004**
- **August 11 2004 – Extended Compliance Deadline to October 31 2007**
- **December 2006 – Rule Revisions - Streamlining**
- **December 2008 – Rule Finalized, effective on April 4, 2009**

SPCC Rule Overview

- **Oil Pollution Prevention and Response regulation (40 CFR 112)**
  - Outlines requirements for prevention of, preparedness for, and response to oil discharges
  - Prevention requirements called the “SPCC rule”
  - Includes requirements for Facility Response Plans (FRPs)
- **Requirements help prevent oil discharges from reaching navigable waters or adjoining shorelines**
- **Requires specific facilities to develop SPCC Plans**
  - Plans don’t need to be submitted to EPA unless you have a releases to navigable water over 1,000 gal or two releases over 42 gals in one year

SPCC Applicability Flowchart



What Is An Oil?

- **US Coast Guard listing (http://www.uscg.mil/vrp/faq/oil.shtml) plus…**
  - Includes animal fats and vegetable oils
  - Includes synthetic oils – machining fluids
- **Definition at 40 CFR 112.2**
- **EPA Documented Interpretations (Telephone Inquiries)**
- **CWA General Description of Oils**

A Substance is Considered a CWA Oil if it Has the Following Characteristics:

- **Limited water solubility,**
- **A relatively cohesive mass upon discharge,**
- **The potential for leaving a residue and being detectable in a water body,**
- **The ability to be removed from surface water and adjoining shorelines, and**
- **The potential for an one of the following adverse environmental effects (Harm to wildlife, etc…..)**

Seek EPA Guidance!

OILS

- **Mixtures of Benzene, Toluene and Xylene**
- **Stoddard Solvents (Mineral Spirits)**
- **Pentene**
- **Naptha**
- **Coal Tar**
- **Asphalt**

NOT OILS

- **Pure Benzene**
- **Pure Toluene**
- **Pure Xylene**
- **Certain Dowtherm Heat Transfer Fluids**
- **LPG, natural gas**

Discharge of Oil – "Sheen Rule" – 40 CFR 110

- **Any facility or vessel is subject to these reporting requirements if it discharges a harmful quantity of oil to U.S. navigable waters, adjoining shorelines, or the contiguous zone**
- **Harmful quantity of discharged oil**
  - Violates state water quality standards
  - Causes a film or sheen on the water's surface
  - Leaves sludge or emulsion beneath the surface.
- **Not based on amount of oil discharged, but instead on the presence of a sheen, sludge, or emulsion**
- **Report discharges to NRC at 1-800-424-8802**

SPCC Reporting Requirements – 40 CFR 112

- **Report to the EPA Regional Administrator (RA) when there is a discharge of:**
  - More than 1,000 U.S. gallons of oil in a single discharge to navigable waters or adjoining shorelines
  - More than 42 U.S. gallons of oil in each of two discharges to navigable waters or adjoining shorelines within a 12-month period
  - When making this determination it is the amount of oil in gallons that reached the navigable waters

Toxic Substances Control Act (TSCA) & Miscellaneous Chemical Laws

- **Toxic Substances Control Act (TSCA)**
- **Federal Insecticide Fungicide and Rodenticide Act (FIFRA)**
- **Radiological Substances**
- **Naturally Occurring Radioactive Materials (NORM)**
- **Registration, Evaluation and Authorisation of Chemicals (REACH) European Union**

What is TSCA?

- **Public Law 94-469 [October 11, 1976]**
- **Implemented at 40 CFR 700 – 799**
- **Regulation aimed at controlling the manufacture and import of chemical substances in the U.S.**
- **Includes provisions banning dioxins and polychlorinated biphenyls (PCBs)**
- **Amended to ban asbestos in schools**

Why TSCA?

- **To control the manufacture or import of hazardous materials without adequate toxicological data**
- **To regulate the use of toxic materials and restrict new usages**

How does TSCA Control?

- **EPA responsible for manufacturers**
- **EPA and US Dept of Homeland Security responsible for importers**
- **Requires notification to government of new production**

Most Well-Known of TSCA Provisions

- **Three types of PCB transformers:**
  - Non-PCB transformers <50 ppm PCB
  - PCB-Contaminated transformers >50 ppm but <500 ppm
  - PCB transformers - >500 ppm
- **Requirements for location of PCB storage**
- **Inspection requirements for in-use transformers**
- **Document retention requirements**

Other PCB items

- **Hydraulic systems**
- **Electromagnets, switches**
- **Capacitors**
- **Circuit breakers**
- **Heat transfer systems**
- **Scientific instruments**

PCB Disposal

- **Spill cleanup and wastes**
- **General PCB disposal**
- **Recordkeeping and manifesting**

FIFRA

- **Federal Insecticide, Fungicide and Rodenticide Act**
- **Passed in 1947, amended often**
- ***No person may distribute, sell or receive pesticides, unless first registered with the EPA***

Radiologic Issues

- **Multimedia compliance auditing generally includes a review of radiation safety**
- **Licensing**
- **Employee exposure**
- **Naturally-occurring materials**

Radiation Source Licensing

- **Many businesses have radiation sources:**
  - X-ray crystallography
  - X-ray equipment
  - Nuclear thickness gages
- **Sources must be licensed by the NRC**
- **Sources are individually tracked and must be leak-tested on an annual basis**
- **A radiation safety officer (RSO) must be designated**

Radiation – Employee Exposure

- **Employee exposure is generally governed by state Radiological Health authorities**
- **Employees must wear dosimeters when working on or around certain equipment**
- **Auditors should observe dosimeter use (e.g., note if they are all piled up on the source)**
- **Employers must keep records of exposure**

Naturally-Occurring Radioactive Materials

- **NORM**
- **Materials, especially uranium and thorium may be present in the workplace**
- **Naturally-occurring substances are still subject to the requirements of state radiologic health authorities.**

REACH

- **Registration, Evaluation and Authorisation of Chemicals**
- **European Law restricting chemical manufacture in place in 2007**
- **Full registration of chemical substances in place by 2009**
- **US Manufacturers will be required to comply and register exported chemicals**
- **Similar requirements in China**

Solid and Hazardous Waste

Federal Regulation of Hazardous and Special Waste – Key Laws and Regulations

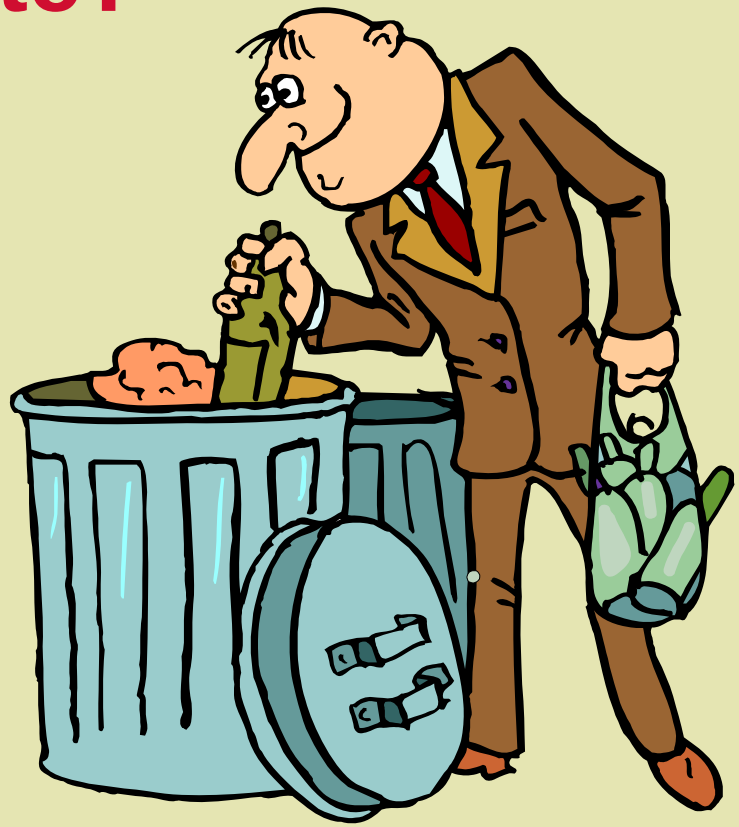
- Resource Conservation and Recovery Act (RCRA – 1976)
  - Solid Waste Disposal Act (SWDA – 1980)
  - Hazardous and Solid Waste Amendments (HSWA – 1984)
- Title 40, Parts 260 – 279
- Law on RegScan under Federal EHS, Environment, US Code Environmental Laws, Title 42 – Public Health and Welfare, Chapter 82 Solid Waste Disposal
- Regulations on RegScan under Federal EHS, Environment, 40 CFR 199-299

Waste Management

What is a Solid Waste?

Discarded material--whether recycled, treated, disposed of, incinerated, accumulated or stored.

Not necessarily a solid material; can be a liquid, semi-solid or gas.

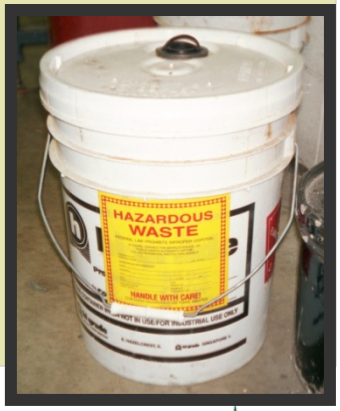


Waste Management

Waste Management

Why "Characterize" Solid Wastes?

- Required by the regulations.
- Critical to determine waste management requirements.
- Ensures you only pay for what you have to.



Waste Management

Four Categories of Solid Waste

Hazardous

Universal

Special

Non-Hazardous

Hazardous Waste

What is a Hazardous Waste?

To be a hazardous waste, a substance must:

- Be a **solid waste.** (discarded material--whether recycled, treated, disposed of, incinerated, accumulated or stored). (*Not necessarily a solid material; can be a liquid or contained gas)*

  and

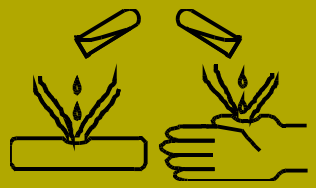
  - Be listed as a **RCRA (F, K, P or U) hazardous waste.**

  or

  - Exhibit any one or more of the characteristics of a **hazardous waste.**

Toxic
Fails TCLP test

Ignitable
Flash point
below 140º F



Corrosive
Acid: pH of 2 or less
Caustic: pH of 12.5 or greater

Reactive

Hazardous Waste

Hazardous wastes are regulated under:

- OSHA worker-safety laws.
- DOT transportation laws.
- EPA environmental laws.

Environmental Law: Resource Conservation and Recovery Act.
(RCRA)

Hazardous Waste Generator Categories

Federal Law: Resource Conservation and Recovery Act (RCRA)

Three Classifications of Waste Generators and State Variations:

Large-Quantity Generator (LQG)

Generates a total of **more than 2,200** pounds of hazardous waste in any calendar month of a given year.

Small-Quantity Generator (SQG) or Washington Medium Quantity Generator (MQG)
Generates **between 220 and 2,200** pounds of hazardous waste in every calendar month of a given year.

Conditionally Exempt Small-Quantity Generator (CESQG) or Washington SQG
Generates **less than 220** pounds of hazardous waste per month.

RCRA regulations differ depending on how much of a hazardous waste is generated.

Hazardous Waste Noncompliance Penalties

	Penalties Per Day Per Violation		
Hazardous Waste (RCRA)	Fine		Prison Term
Criminal Penalties:			
Knowing Violations	$ 50,000	and/or	5 years
Knowing Endangerment	$ 250,000	and/or	15 years
For Organizations:	$1,000,000		
Civil Penalties:	Up to $ 27,500		

Second conviction: Maximums Double

Special Provisions:

- Citizen suits: Citizens can bring suits against an alleged violator.
- EPA can bring suit even if a situation poses only a risk of harm.

Suits can be brought against parties for violations preceding RCRA enactment.

Waste Management

The hazardous waste **generator** is responsible for its waste from:

to

Even for the actions of:

- Waste transporters.
- Treatment, storage, and disposal facilities (TSDFs) and waste recyclers.

Washington and Oregon State Differences

- **Washington requires annual hazardous waste reports instead of biennial reports**
- **Some states identify additional hazardous waste**
  - WA and CA have pH test for solid corrosives
  - WA and CA have additional toxic waste designations or tests
  - WA and CA have additional listed wastes
  - WA has SQG, MGG, and LQG.
  - OR has CESQG, SQG, and LQG