

APTI Course 452

Principles and Practices of Air Pollution Control

Chapter 11:
The United States Clean Air Act

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Chapter Overview

- National Ambient Air Quality Standards
- Air Quality Control Regions
- State Implementation Plans (SIPs)
- New Source Review: Permit Requirements
- Hazardous Air Pollutants
- Federal Enforcement

2

What does the CAA regulate?

- Section 302 defines “air pollution” as material that is emitted or otherwise enters the ambient air and causes negative health effects; or damages plants, property or animals; or causes an unreasonable interference with the enjoyment of life or property.
- The EPA defines ambient air as “that portion of the atmosphere external to buildings, to which the public has access.”
- Accordingly, the CAA regulates only pollution that enters the outside air.

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National Ambient Air Quality Standards

- The Six Criteria Pollutants
 - ozone, particulates (PM10 and PM2.5), sulfur oxides, carbon monoxide, nitrogen dioxide and lead.
- Primary NAAQS must protect the most sensitive segments of the population
- Secondary NAAQS

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Air Quality Control Regions

- AQCRs
- Attainment, Nonattainment or Unclassifiable
- Nonattainment classifications
- Design Values
 - used to designate and classify nonattainment areas

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State Implementation Plans (SIPs)

- Historical Context
- Provisions
- Enforceability

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SIPs- Historical Context

- 1975
- 1977
- 1990

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SIPs- Provisions

- Develop an ambient air quality-monitoring network
- Conduct air quality modeling
- Create a nonattainment timetable for compliance
- Establish a permit system for new source review
- Enforce procedures and policy

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SIPs- Enforceability

- EPA Approval
 - If EPA rejects a SIP, it can publish and implement its own Federal Implementation Plan (FIP)
- EPA Sanctions
- Federal Weight

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New Source Review: Permit Requirements

- The Clean Air Act requires permits to build or add to major stationary sources of air pollution (New Source Review).

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Permits

- Prevention of Significant Deterioration (PSD) permits are required for new major sources or a major source making a major modification in areas that meet the National Ambient Air Quality Standards;
- Nonattainment NSR permits which are required for new major sources or major sources making a major modification in areas that do not meet one or more of the National Ambient Air Quality Standards; and
- Minor source permits.

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Major Source

- Any source having a "potential to emit" emissions of any regulated pollutant greater than 250 tpy or 100 tpy for 28 specified sources.

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New Source Performance Standards (NSPS)

- New Source Performance Standards (NSPS)
 - categories of stationary sources, which may contribute significantly to air pollution
 - 65 Source Categories
- Modification
 - Changes that do not effect emissions
 - Changes that effect emissions

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Prevention of Significant Deterioration (PSD)

- Major Modifications
 - Any change at a major source which will cause an increase of any regulated pollutant to exceed “significant” quantities.
- Attainment Area
 - EPA has a duty to prevent significant deterioration in these clean areas.

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Requirements For Attainment Pollutants (area has met NAAQs)

- BACT (Best Available Control Technology)
 - Economics a factor
- PSD Classification Areas
 - contribution from the new source will not exceed the “allowable increment.”
- Increment Consumption

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Requirements for Non-attainment Pollutants (area has not met NAAQ)

- Major Sources
- Major Modification
- LAER (Lowest Achievable Emission Rate)
Economics not a factor
- Common Ownership Compliance
- Emission Offsets

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Additional Requirements for Non-attainment Pollutants (cont.)

- Nonattainment Pre-Construction Review
- Complete Compliance
- Emission Offset Requirement

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Hazardous Air Pollutants

- Health Based Standards (1970 CAA)
– NESHAPS
- Technology Based Standards (1990 CAA)
– “Maximum achievable control technology” (MACT), taking into consideration technology and the cost of achieving such emission reduction.
– Major Sources

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Other Programs

- Acid Rain Program
- to reduce acid rain that is formed from sulfur dioxide and nitrogen oxides emissions to the atmosphere by reducing these emissions from fossil fuel-fired steam generating units.

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Other Programs

- Sulfur Dioxide Emission Reduction Program
 - imposes a national emission cap
 - establishes a "marketable trading" plan for SO₂.

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Other Programs

- Nitrogen Oxides Emission Reduction Program
- Operating Permit Program (Title V)

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Other Programs

- Stratospheric Ozone Program
- Visibility Protection Program

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Title V Operating Permits

- Legally enforceable documents designed to improve compliance by incorporating state and federal requirements into one document
- Issued to all major sources and a limited number of minor sources
- Primarily issued by State and Local Agencies
- Small number issued by Federal Government
- Does not replace PSD or NSR permits but includes the basic requirements from these permits
- Requires source to pay fees based on tons of emissions (designed to cover the cost of the program)

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Other Programs

- Mobile Sources
 - CAA authorizes EPA to establish motor vehicle emission standards and to test vehicles for compliance (or require manufacturers to perform such testing).
 - CAA authorizes EPA to regulate the composition of automobile fuels

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Federal Enforcement

- Civil Action
- Administrative Penalties

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Federal Enforcement

- Criminal Action
- Citizen Suits
- EPA Emergency Powers

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Other Strategies

- Interstate Air Pollution
- Leak Detection and Repair (LDAR)
- Greenhouse Gas Emissions

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Chapter Summary

- National Ambient Air Quality Standards
- Air Quality Control Regions
- State Implementation Plans (SIPs)
- New Source Review: Permit Requirements
- Hazardous Air Pollutants
- Federal Enforcement

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Questions

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Principles and Practices of Air Pollution Control

Chapter 12
Pollution Prevention

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Chapter Overview

- Introduction to Pollution Prevention
 - And Waste Minimization
- Legislative History
- Pollution Prevention/Waste Minimization Strategies

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Legislative History

- Resource Conservation and Recovery Act (1984)
- Pollution Prevention Act (1990)

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What is Pollution Prevention? What is Waste Minimization?

- **Source Reduction** and/or environmentally sound **Recycling** methods prior to energy recovery, treatment, or disposal of wastes.
- Treatment is not part of P2 or Waste Min

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P2/Waste Minimization

- Does not include waste treatment, i.e., any process designed to change the physical, chemical, or biological composition of wastestreams.
- For example, compacting, neutralizing, diluting, and incineration are not typically considered waste minimization practices.

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Strategy

- Determine what wastes are generated
- Characterize each waste stream
- Identify waste prevention measures
- Identify potential production changes that would improve efficiency
- Investigate opportunities for new products or ingredients
- Set priorities and goals

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<https://www.epa.gov/p2>

Pollution Prevention (P2)



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Environmental Protection Hierarchy

Pollution prevention (P2) is any practice that reduces, eliminates, or prevents pollution at its source, also known as "source reduction."

- Source reduction is fundamentally different and more desirable than recycling, treatment and disposal.
- There are significant opportunities for industry to reduce or prevent pollution at the source through cost-effective changes in production, operation, and raw materials use.
- The opportunities for source reduction are often not realized because existing regulations focus upon treatment and disposal.

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Pollution Prevention Strategies: Source Reduction

- Materials Substitution
- Source Control

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Pollution Prevention Strategies: Recycling

- Recycling can be thought of as the collection and reprocessing of a resource so it can be used again, though not necessarily for its original purpose

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Pollution Prevention Strategies:

- Examples Include?

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Pollution Prevention Information Clearinghouse

<http://www.epa.gov/p2/pollution-prevention-resources#ppic>

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P2 Resources Search

This resource contains a collection of case studies, webinars, tools and articles about P2 solutions, practices, and technologies. Some of the resources listed are grantee work products and may not have been formally reviewed by EPA, and may not reflect the views and policies of EPA. The EPA does not endorse trade names or recommend the use of commercial products mentioned in these documents.

Search for P2 resources by keywords, sector, or processes. To search by P2 National Emphasis Area (NEA), select the "Sector" search and choose the NEA.

Keywords Sector Processes

Use the Ctrl (Windows) or Command (Mac) key to select multiple options. To select multiple adjacent options, use the Shift key. To reset, choose "Select All".

Select Sector(s)	Select Processes
Select All	Select All
All NEA Sectors	Air Compression
Aerospace Manufacturing & Maintenance	Assembly

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32 record(s) found. Some of the following links exist this site.
Sectors: Aerospace Manufacturing & Maintenance

CSV PDF Modify Search

Title	Year	Sector	Process	Resource Type	Info
NEA #4: Aerospace Product and Parts Manufacturing and Maintenance	2022	Aerospace Manufacturing & Maintenance	Sector Background, Manufacturing, Chemical Substitution, Chemical Use Reduction, Cleaning and Degreasing, Coating/Painting, Process Modification, Process Analysis, Solvents	Fact Sheet	1
Metal Fabrication Design Practices that Reduce Scrap	2019	Metals Manufacturing & Fabrication, Aerospace Manufacturing & Maintenance, Automotive Manufacturing & Maintenance	Process Modification	Article	1
Metal Finishing Pollution Prevention	2018	Metals Manufacturing & Fabrication, Aerospace Manufacturing & Maintenance, Automotive Manufacturing &	Coating/Painting, Cleaning and Degreasing, Process Modification, Wastewater Treatment	Fact Sheet	1

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Chapter Summary

- Introduction to Pollution Prevention
- Legislative History
- Pollution Prevention Strategies

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Chapter 13:
Laws and Regulations

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Chapter Overview

- Common Law
- Statutory Law
- Administrative Law
- Constitutional Law
- Sources of Federal Statutes
- Sources of Federal Regulations

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Roots of Our Legal System

Common Law:
The 13 colonies
adopted a legal
system similar
to that in
England.



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Common Law

- A legislative body did not create it as statutory law is constructed today; rather, common law evolved out of customs and traditions.



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Common Law: Nuisance

- A claim of nuisance implied that an individual had caused an unreasonable interference with another person's use of his own property.
- A private nuisance harms only the plaintiff. A public nuisance harms the community

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Common Law: Trespass

- Trespass was said to have occurred when a landowner was denied exclusive use of his property.
- Many argued that particulate-laden smoke that drifted onto a piece of property and caused harm was trespass.

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Sources of "Law"

- Constitution
- Treaties
- Statutes
- Admin. Agency Rules and Regulations
- Judicial Decisions

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Who Generates "Law"

- Federal
- Tribes
- States
- Local County, City & Districts

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Source of Power

- **Federal:** U.S. Constitution enumerated powers
- **States:** Anything else
State Police Power: Health, Safety, & Welfare
- **Local** From the state

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Conflict of Law

- **SUPREMACY CLAUSE**
- Feb 20, 1809: Supreme Court ruled in US vs Peters that power of the Federal government is greater than that of any individual state

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Statutory Law

- Created by Legislative bodies
 - Congress
 - State Legislatures
 - Tribal Councils
 - City and County Councils/Boards
 - Some regional and local districts

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3 Branches of Gov't

- Legislative branch creates statutes
- The judicial branch interprets statutory law
- The administrative (executive) branch implements statutes

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Administrative Law

- Administrative agencies have no inherent or residual authority, but can act (pass regulation, etc.) only from authority that is "delegated" to them from state or federal statute.



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Classification of Court Litigation

- **Civil**
 - Cases are brought by the government and by private parties
 - Relief is fines and/or injunctions
- **Criminal**
 - Cases are brought by the gov't only
 - Penalties and/or loss of liberty



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Burden of Proof in Court Cases

- **Civil Law: Preponderance of the evidence (over 50%)**
- **Criminal Law: Beyond a reasonable doubt**



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Court Remedies

- **Civil cases**
Fines (\$) and/or injunction
(TRO, Temporary and Permanent)
- **Criminal cases**
Fines and/or Imprisonment

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Constitutional Law

- Several amendments to the U.S. Constitution need to be considered by inspectors in the discharge of their duties because they place limitations on governmental activity.

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Constitutional Law: The Fourth Amendment

Citizens (including corporations) will be free from unreasonable search and seizure.

Horizontal lines for notes

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“Reasonable” searches as decided by the courts

- Entry into public areas
- Entry with consent
- Observation without entry
- Entry into open fields
- Search of abandoned things
- Entry in emergencies
- Entry with a warrant
- **Your inspection must fit into one of these categories

Horizontal lines for notes

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An “Open Field” may not be really open or really a field

The Fourth Amendment protects "persons, houses, papers, and effects."

Even if... fences, closed or locked gates, "No Trespassing" signs and/or an objecting owner, its still an "open field" Oliver v. United States, 466 U.S. 170, 183 (1984)

A fenced 2,000 acre industrial complex is an "open field" Dow Chemical Co. v. US 476 US 227 (1986); Air Pollution Variance Bd. of Colorado v. Western Alfalfa Corp. 416 U.S. 861 (1974)

Horizontal lines for notes

66

FAA Drone Rules

- Part 107
- Applies to UAS (unmanned aircraft)
- From 0.55 – 55 #
- Must keep drone within unaided sight
- 30 min. before sunrise – 30 min. after sunset
- Minimum visibility: 3 miles
- Max altitude: 400 ft above ground
- Max speed: 100 mph

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FAA Drone Rules (cont'd)

- Must register drone
- Must have remote pilot certificate
- Minimum age of operator: 16 years old
- Waivers available for restrictions
- Rules are for safety, NOT privacy
- Federal preemption applies

source: www.faa.gov

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Constitutional Law: The Fifth Amendment

Persons cannot be required to give testimony against themselves in government inquiry, investigation or prosecution. But you can revoke their permit if they will not give you the needed information.

This does not apply to corporations.

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Constitutional Law: Due Process: The Fourteenth Amendment

Due process of law and equal protection are guaranteed for all citizens.

Governmental action shall not deprive a person of life, liberty, and property without due process.

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Constitutional Law: Equal Protection: The Fourteenth Amendment

The enactment of laws that establish arbitrary systems of classification or that permits discrimination between persons of the same classification is prohibited.

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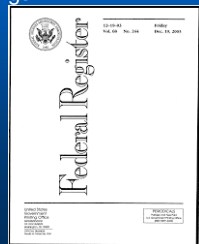
Helpful

- <https://www.epa.gov/clean-air-act-overview/clean-air-act-text>
- Has a table that that gives corresponding section numbers in the Clean Air Act (CAA) and the U.S. Code (USC).

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Federal Regulations

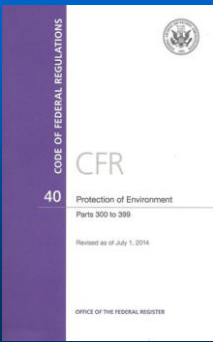
- Federal Register has notices of federal agency actions, like rulemakings
- The Federal Register will usually be cited as:
Volume FR Page (Date).



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Federal Regulations

- Once final, federal regulations go into the Code of Federal Regulations (CFR)
- Cited as follows: Title CFR Part. Section
- EPA regs are in Title 40



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Chapter Summary

- Common Law
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- Sources of Federal Statutes
- Sources of Federal Regulations

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Questions

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Chapter 14:
Compliance and Enforcement

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Chapter Overview

- Enforcement Systems
- Penalty Assessment Criteria

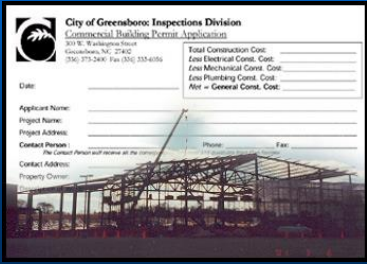
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Enforcement Systems

- Permits to Construct and Operate
- Compliance Monitoring
- Compliance Plan Enforcement
- Surveillance and Complaint Response
- Initiation of an Enforcement Action

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Permits to Construct and Operate



City of Greensboro Inspections Division
Commercial Building Permit Application
301 N. Wilmington Street
Greensboro, NC 27402
(336) 373-2400 Fax (336) 333-6105

Date: _____

Applicant Name: _____

Project Name: _____


Project Address: _____

Contact Person: _____ Phone: _____ Fax: _____

Contact Address: _____
The Contact Person will receive all the notices.

Property Owner: _____

Total Construction Cost:	_____
Zone Electrical Const. Cost:	_____
Zone Mechanical Const. Cost:	_____
Zone Plumbing Const. Cost:	_____
Net - General Const. Cost:	_____



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Permits to Construct

- Purpose



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Permits to Construct

- Provide for engineering review prior to construction
- Insures required emission monitors will be installed
- May deny permit if the source cannot comply
- Gives notice of change when adding, modifying or deleting sources
- Keeps the emission inventory up to date

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Permits to Operate

- standard application with specific criteria for approval;
- regular monitoring and reporting requirements;
- payment of an annual renewal fee;
- minimum training requirements for site staff;
- establishes authority to issue permits and assure compliance.

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Permits to Operate

- subjects sources to periodic review
- allows the denial of an operating permit, making operation of a source a violation
- provides update regarding ownership change, process change, materials change, etc.
- updates emission inventories
- Provides a systematic check of compliance status

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Compliance Monitoring and Inspections

- Introduction to Compliance Monitoring
- Compliance Monitoring Strategy
- Compliance Monitoring Categories
- Compliance Plan Enforcement

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Compliance Monitoring: Introduction

- Continuous, Self-Monitoring
- Compliance Inspections

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Compliance Monitoring

- Compliance Incentives
- Innovations
- Auditing
- Environmental Management Systems
- Pollution Prevention
- Small Business
- Small Community

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Compliance Monitoring: Inspections

- To evaluate the compliance status of an operational facility
- Routine,
- Emergency response,
- Complaint



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Inspections: Objectives

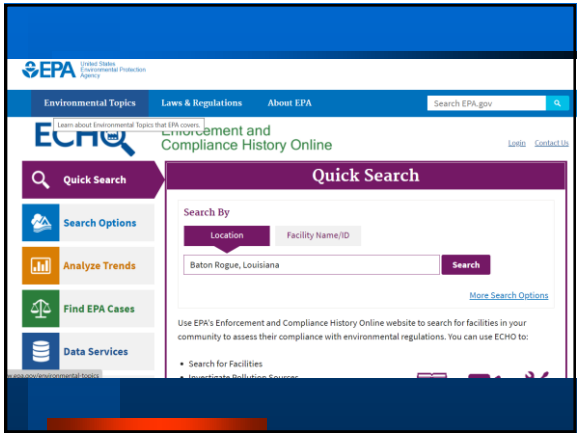
- Observe and Identify Problems
- Provide Facts About Compliance Status
- Collect and Preserve Evidence
- Act as Deterrent

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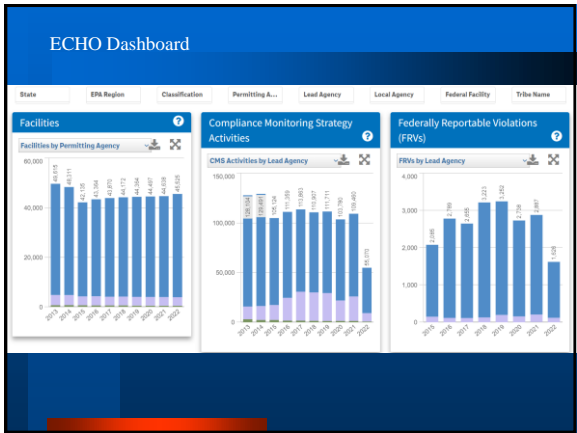
Enforcement and Compliance History Online (ECHO)

- <http://echo.epa.gov>
- provides public access to compliance and enforcement information for approximately 800,000 EPA-regulated facilities.

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Inspections: Conducting an Inspection

- Review Rules and Source Records
- Prepare an Inspection Plan
- Enter the Facility and Hold Opening Conference
- Conduct Inspection, Obtain Samples, and Hold Closing Conference
- Prepare Report

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Entry

- Unannounced or Scheduled?
- Proper Entry Procedures
- Denied Access Procedures
- Signing Entry Forms

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Entry

- Proper site entry procedures
 - Drive-by and off-site observations
 - Look for obvious concerns
 - Familiarize yourself with layout
 - Normal working hours



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Entry



Use main gate or entry

Contact person in charge

- Plant manager, environmental manager, owner, etc.

Identify yourself with your credentials

Identify company representatives



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Entry

- If denied entry
 - Be tactful, be safe
 - Use reason and logic
 - Record observations
 - Contact supervisor

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Entry

- **Inspection Warrants**
 - When facility has denied access
 - If full consent is withdrawn during inspection
 - May be done in advance of inspection
 - Inspector & attorneys work as team

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Opening Conference

- **Explain:**
 - Authority
 - Purpose
 - Establish Inspection Objectives
 - Scope of inspection
 - Establish Inspection Order
 - Everything you might need to do
 - Estimated time to complete



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Opening Conference

Explain:

- **Documentation methods**
 - Notes
 - Procedures recommended
 - Copies
 - Photographs
 - Audio recordings
 - Samples, etc.



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Opening Conference

- **Discuss Confidential Business Information (CBI)**
 - Their right to claim CBI
 - Provide paperwork
- **Identify special safety concerns**
 - May be denied access W/O proper PPE
 - PPE (hard hat, safety glasses etc)
 - DO NOT SIGN LIABILITY WAIVER

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Proper Attire

- **Wear what's appropriate**
 - Industrial site?
 - Office visit?
- **Wear what's safe**
 - Proper PPE



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PERSONAL PROTECTIVE EQUIPMENT

- **Hard Hat**
- **Foot Protection (more than one pair)**
- **Vision and Hearing Protection**
- **Respirators**
- **First Aid Kit**
- **Protective Clothing**
- **Gloves**

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Inspection Report



- **Document violations**
- **Document compliance**
- **Coordinate with other agencies if needed**

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Professionalism



- Don't Pretend Knowledge
- Don't Recommend Solutions
- Don't Act As An Attorney
- Be Respectful

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Confidential Information



- Handling Confidential Data
 - Store in Locked Files
 - Destroy or Return when Not Needed
- Public Requests
- Improper Disclosure
 - Fines
 - Imprisonment
 - Dismissal

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Closing Conference



- Format varies
- Preliminary (tentative) discussion of findings
- Resolve outstanding issues
- Complete paperwork –
- Follow your agency's policy in regard to providing notice of violations

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Inspector Liability

- Being at appropriate locations
- Doing your assigned job
- **Following your SOP's**



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Summary

- **General Inspection Pattern**
- **Attire & Attitude**
- **Neutrality**
- **Entry Procedures**
- **Confidentiality**
- **Reporting**

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A bad inspection is a great defense!

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Surveillance and Complaint Response

- Surveillance
- Complaint Response



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Common types of complaints



- Odors
- Dust
- Point sources
- An air pollution episode
- General air quality, "bad air"

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Complaint Priority

- APC Officers and their Inspectors are not emergency response personnel, but,
- Complaints are an inspector's 2nd highest priority.
- Complaints are usually received by support staff
Dispatched to field staff
– Usually respond within 24 hours

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Initiation of an Enforcement Action

- Goals
- Alternative Enforcement Procedures
- Steps in an Enforcement Action

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Enforcement Action: Goals

- Correct Violation
- Deter Future Violations
- Maintain Consistency and Fairness
- Seek Criminal Sanctions
- Make Effective Use of Enforcement Resources

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Enforcement Action: Alternative Enforcement Procedures

- Notice of Violation
- Informal
- Formal Abatement Order/Consent Degree
- Citations
- Administrative Fine
- Civil or Criminal Punishment
- Court-Ordered Injunction
- Revocation of Operating Permit

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For help on criminal investigations

- Contact your EPA Region's Criminal Investigation Division

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Enforcement Action: Steps in an Enforcement Action

- Violation is Found and Documented
- Level and Type of Enforcement Action is Decided
- Enforcement Documents Drafted and Filed
- Settlement Negotiations Entered
- Hearing or Trial Conducted

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Penalty Assessment Criteria: Penalty Factors (CAA § 113))

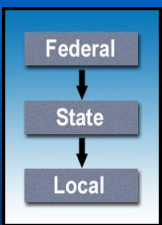
- Size of Business
- Economic Effect of Penalty
- Company Compliance History
- Duration of Violation
- Previous Penalties for Same Offense
- Economic Benefit for Noncompliance
- Seriousness of Violation



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Penalty Assessment Criteria: Enforcement Responsibility

- Federal
- State
- Local



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Any Credible Evidence Rule

- Congress gave the EPA authority to use (in lieu of applicable test methods) "any credible evidence" to prove a violation.

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Compliance Audits

- Purpose
- Some states have Audit Privilege laws, policies and or rules

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Chapter Summary

- Enforcement Systems
- Penalty Assessment Criteria

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Questions

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POST – TEST

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