



# Intro to Air:

## Air Permitting and Compliance Basics

MEC - Workshop P  
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# Intro to Air: Air Permitting and Compliance Basics

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- Julie Wagner, P.E., Environmental Quality Management, Inc., Sr. Project Manager

# Topics to be Covered

- Air regulatory review
- Air permitting
  - When is a permit needed?
  - How to obtain a permit
- Compliance with permit

# Regulatory Review



# US EPA Regulated Air Emissions – Background

## Sources

- Moving Sources – aircraft, motor vehicles
- Stationary Source Emissions – grouped into Industry sector categories

## Emissions

- National Ambient Air Quality Standards
  - Established to protect public health (Primary) and public welfare/environment (Secondary)
  - Criteria Air Pollutants
    - CO, NO<sub>2</sub>, O<sub>3</sub> (VOCs), particulate matter, SO<sub>2</sub>, lead
- Other pollutants
  - National Emission Standards for Hazardous Air Pollutants
  - Acid rain, emissions that deplete stratospheric ozone layer, regional haze, noise pollution

# Federal Rules – Air Permitting

- 40 CFR Part 60 – New Source Performance Standards
- 40 CFR Parts 61/63 – National Emissions Standards for Hazardous Air Pollutants
- 40 CFR Parts 51/52 – New Source Review
- 40 CFR Parts 72-78 – Acid Rain Program
- 40 CFR Parts 70/71 – Title V Permitting Program
- 40 CFR Part 82 Stratospheric Ozone Protection
- 40 CFR Part 98 Greenhouse Gas Reporting Program

# Federal Standards for Processes (NSPS/NESHAP)

	<i>New Source Performance Standards (NSPS) 40 CFR Part 60</i>	<i>National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 61/63</i>
<i>Target Pollutants</i>	Criteria Pollutants (NO <sub>x</sub> , SO <sub>2</sub> , CO, VOC, PM)	Hazardous Air Pollutants (ex. benzene, perchloroethylene, methylene chloride)
<i>Applies To What Processes</i>	New and modified/reconstructed units (some existing units covered by Emission Guidelines)	Both new and existing units
<i>Applies at What Sites/Facilities</i>	All	Major sources of HAPs (>10/25) Area sources of HAPs (<10/25)
<i>Categories</i>	~90	~140

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# New Source Review 40 CFR Parts 51/52

- New Source Review (NSR) is the federal air permitting program that regulates the construction of major new sources and major modifications to existing sources to maintain NAAQS
- Prevention of Significant Deterioration (PSD)
  - NAAQS Attainment Areas
  - Best Available Control Technology (BACT)
- Non-Attainment NSR (NNSR)
  - NAAQS Non-Attainment Areas
  - Lowest Achievable Emissions Rate Technology (LAER)
  - Emission Offsets
- Modeling/U.S. EPA/Public Comment





# Title V Permitting Program 40 CFR Parts 70/71

- Federal operating permit program
  - Potential emissions exceed major source thresholds:
    - 100 tpy for any regulated air pollutant (lower for non-attainment areas)
    - 10 tpy for a single HAP or 25 tpy for any combination of HAPs
  - Other triggers = NSR Permit, Acid Rain Program, NSPS standards, most NESHAP/MACT standards
- Purpose was to ensure compliance with all applicable requirements of the Clean Air Act and to enhance U.S. EPA's ability to enforce it
- Before Title V, permits were issued for individual emission units and had inconsistent permit terms and recordkeeping and reporting requirements
- After Title V, all state and federal requirements were aggregated into one permit with consistent reporting deadlines and permit term (5 years)



# Stratospheric Ozone Protection Program 40 CFR Part 82

- CFCs (R-11, R-12), HCFCs (R-22, R-123)
- Technician requirements
- Handler requirements
- Owner/operator requirements (> 50 lbs) (documentation, leak rate calculation, recordkeeping, reporting)
- Current leak rate thresholds are:
  - 30% industrial process refrigeration
  - 20% commercial refrigeration
  - 10% comfort cooling appliances

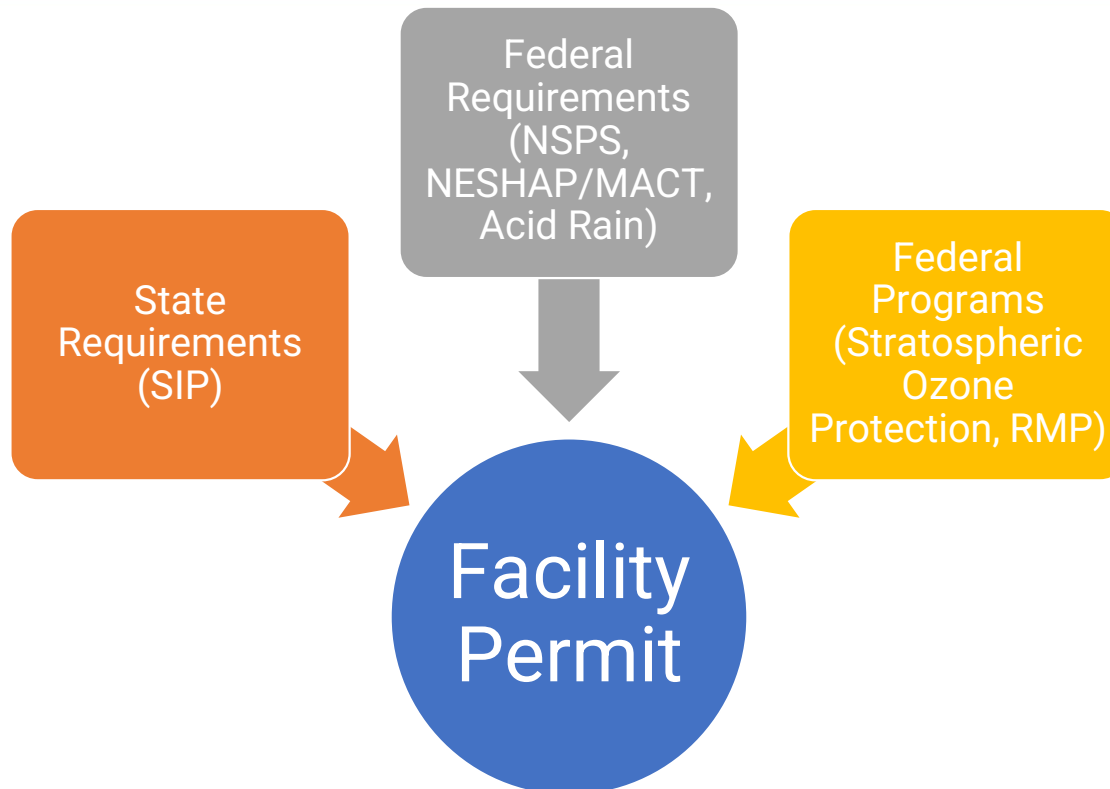


# Greenhouse Gas Reporting Program

## 40 CFR Part 98

- The Greenhouse Gas Reporting Program (GHGRP) collects Greenhouse Gas (GHG) data from large emitting facilities
- In general, the rule requires facilities that emit  $\geq 25,000$  metric tons of carbon dioxide equivalent (CO<sub>2</sub>e) per year to submit annual emission reports
- Certain source categories are required to report regardless of emission levels
- Subject facilities must submit reports using U.S. EPA's e-GGRT web-based reporting tool
- Reports are due ~ March 31 each year for the previous year

# Putting it All Together



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# Permitting



# Permit Sequence

- **Construction Permit**

- Must obtain prior to starting construction
  - Construction
  - Permit to Install (PTI)
  - Permit to Install and Operate (PTIO)



- **Operating Permit**



# Construction Activities Allowed/Not Allowed Prior to Permit Receipt

- Allowed activities - depends on type of construction permit review needed; in general
  - Clearing and grading of site
  - Demo and removal of existing equipment/buildings
  - Installation of buildings or structures not containing air contaminant sources
  - Excavating building footers, pilings, foundations, pads, and platforms, etc.; installing concrete forms and reinforcing bar for any concrete footers, pilings, foundations, pads and platforms, etc. (note: **no pouring of concrete is allowed**)
  - Installing temporary utilities for site construction including electricity, water, gas, communication and sanitary (note: **not utilities that will be connected to emission unit**)
- Not allowed activities, in general:
  - Pouring of concrete for foundation or footers
  - No utilities run that will be connected to emission units
  - Equipment delivered to site



# Type of Operating Permits:

- **New Source Review Construction Permits – LARGEST**
  - PSD Major Source/Major Modification Thresholds
    - 100 tpy for any listed source (list of 28) category
    - 250 tpy for any other source category
    - Pollutant-specific thresholds for modifications
  - NNSR Major Source/Major Modification Thresholds
    - 100 tpy
    - Pollutant-specific thresholds for modifications
- **Title V Operating Permit – LARGE**
  - Major source thresholds
    - 100 tpy for any air regulated pollutant (lower for non-attainment areas)
    - 10 tpy for a single HAP or 25 tpy for any combination of HAPs
  - Other triggers = NSR Permit, Acid Rain Program, NSPS standards, most NESHAP/MACT standards



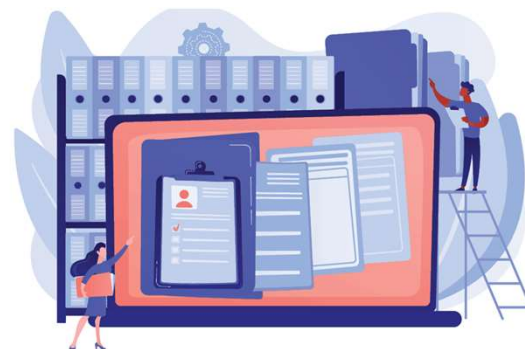


# Type of Operating Permits (cont.):

- Federally Enforceable State Operating Permit (FESOP) – MEDIUM
  - For synthetic minor sources
  - Site has taken a federally enforceable restriction (such as operating restrictions or emission limitations) to maintain potential emissions less than Title V major source thresholds
- State Operating Permit (PTI/PTO/PTIO) – SMALL
  - For natural minor sources
- Everything Else (Registration, Permit-by-Rule, General Permit)
  - Emergency Generator
  - Roadway Emissions
- Exemptions

# Exemptions

- Can this project fall under an exemption?
  - Combustion unit < 10 mmBtu/hr
  - R&D
  - De Minimus
    - <10 lb/day of criteria pollutants
  - State Specific
- MAKE SURE YOU DOCUMENT YOUR DECISION TREE



# Types of Permits by State

## OH

- Construction (PTI)
- PTIO
- FEPTIO
- Title V
- PSD/NNSR



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## KY

- Construction
- Registration
- State Origin
- Title V
- PSD/NNSR



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## IN

- Construction
- Minor Source
- FESOP
- Title V
- PSD/NNSR



# Defining a Project



Understand the Emissions Units within Your Project



Consideration of Potential Project Related Emissions



Project Aggregation

# What is an Emission Unit

- Emissions unit
  - Any part of a stationary source that emits or has the potential to emit any pollutant subject to regulations under CAA



- Examples:

- Boilers
- Steam generators
- Combustion turbines
- Paint spray booths



# Emission Unit



- Think of the emissions unit as a race car
  - If all you have to do is press the accelerator down to make your race car run faster, without making any changes to your car, you are allowed to make it go faster without a permit modification (as long as the emission unit was originally permitted to run at top speed).
  - If you need to make a pit stop to make physical changes to the original design of the race care, you have now modified the race car and are required to evaluate whether a permit modification is required.

# Individual Emissions Units vs. Grouping Emissions Units

- Example of Individual vs. Grouped units
  - Individual Emissions Unit
    - Only need to consider the modified/affected unit 😊
    - Each machine will have its own limits (e.g., emissions, throughput, etc.) 😊
  - Grouping Units
    - Group limits 😊
    - Modify one unit, modify them all 😞

# Project Aggregation

- A Facility cannot break up a project into smaller projects to avoid permitting implications
- U.S. EPA Guidance – 3/30/2019 Federal Register
  - Projects within the last several years must be reviewed for project aggregation
  - Review your internal documentation of project scope
  - Keep a project aggregation determination justification on record

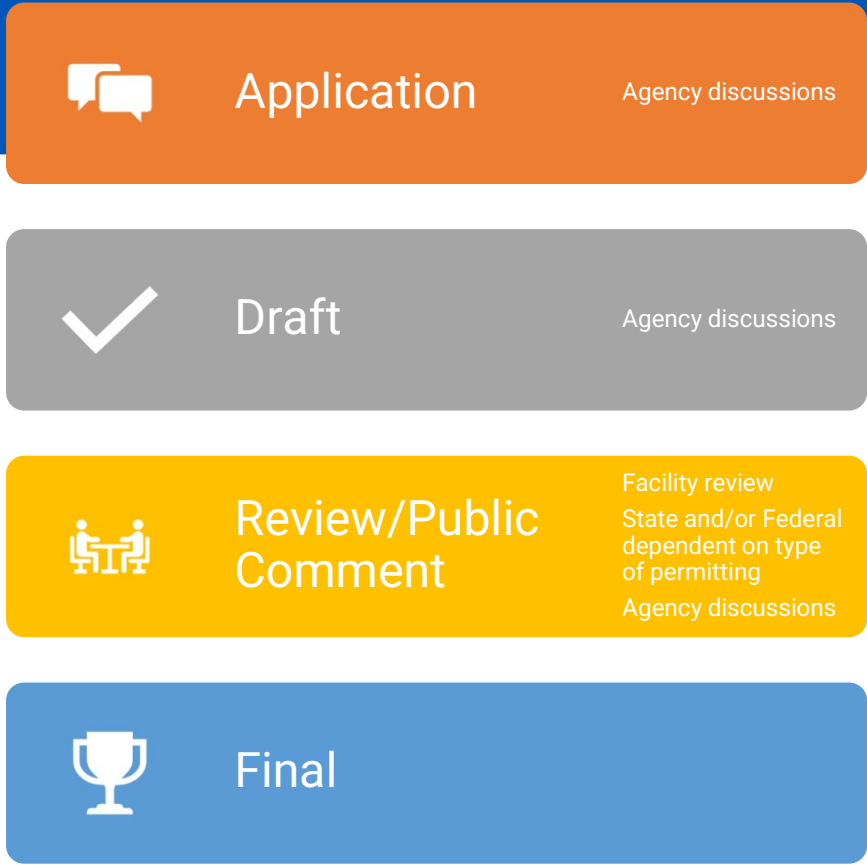


# Defined your project... Now what?

- Determine what type of permit is needed:

<input type="checkbox"/>	New Construction	<input type="checkbox"/>
<input type="checkbox"/>	Modification of existing equipment	<input type="checkbox"/>
<input type="checkbox"/>	Permit By Rule	<input type="checkbox"/>
<input type="checkbox"/>	Exempt	<input type="checkbox"/>

# Permit Process



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# Permitting Application Needs

- What do you need?
  - Facility Contact
    - The person who can answer questions about the application
  - Equipment Change Information
    - New or modified equipment information
    - Process Flow Diagram
    - Potential to Emit (PTE) Calculations
  - Facility-wide information
    - How does that project affect the facility?
      - Location
      - Facility-wide PTE



# Equipment Change Information

- What is new equipment and what will be produced?
  - What are the criteria pollutants looking at?
    - PM, VOC, NOx??
  - What are the raw materials?
- Where will equipment go?
  - New process all together?
  - Addition to an existing process?
  - New building?



# PTE Calculations

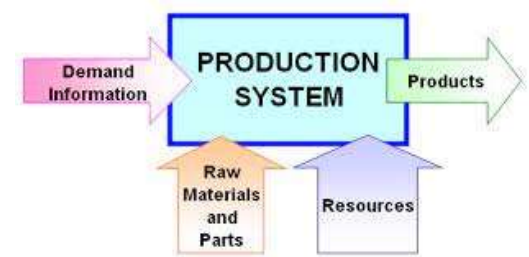
- Need emissions of all criteria pollutants and/or HAPs
  - Project/Emission Unit
    - Throughputs (24/7)
    - Emission factors
      - AP-42
      - Manufacturers Specs
      - Site specific or company specific
  - Facility Wide
    - Existing equipment
      - Include registration and PBR sources
    - Does this addition bump you to next permitting level?



# Where to Get Info



- Plant Engineer
  - Layout of equipment
  - Process flow diagram
  - Understanding how line will operate / description
  - What is the unit's full capacity?
  - Any bottlenecking?
- Planning Coordinator
  - Projected volume/throughput rates
  - Will this be a scale up?





## Tinol Paints International Co. s.a.l.

Est. 1956 - C.R. 7155 Beirut - Capital L.L. 1 200 000 000 Fully Paid - [paints@tinol.com](mailto:paints@tinol.com) - [www.tinol.com](http://www.tinol.com) - Fax 01/867071  
Head Office: Verdun, 01/812345 • Factory: Choueifat, 05/435500 • P.O.Box: 11 - 4895 Beirut, Lebanon  
Tinol World of Colors: Verdun, 01/812812 • Bouchrieh, 01/245222 • Choueifat, 05/430043

1-8200/06-17

Product Specification Sheet:

### Tinopoxy Primer – Intermediate Metal Coatings

Curing agent: Hardener 864

Epoxy corrosion & chemical resistant metal primers & intermediate coatings

Zinc Chromate type, series 8200

Zinc Phosphate, series 8600

#### CHARACTERISTICS

**Tinopoxy Primer-Intermediate Metal Coatings, Series 8200 & 8600** are two-pack cold cured epoxy solvent-based primer-intermediate coatings in high-build form, incorporating rust inhibiting pigments to protect ferrous surfaces against atmospheric and industrial corrosion and simultaneously serve as an intermediary coating on metal surfaces. They combine the characteristics of rust resistant primers and intermediate coatings in one product for practical applications, especially for maintenance painting.

**Tinopoxy Primer-Intermediate Metal Coatings, Series 8200 & 8600** are intended to be applied directly to well-prepared steel & zinc coated (galvanized) metal surfaces in coastal, urban and industrial environments and on surfaces to be immersed in water or buried in soil. They are heat resistant (up to 120°C) & are resistant to chemicals, acids, solvents, oils, saline and sewage water etc...

#### TECHNICAL DATA

Solvent-bearing epoxy based coatings, complying with the technical requirements of International Specifications ISO 12944-5 & British Standards BS 5493 "protective paint systems for steel structure".

#### COMPOSITION

Characteristics	Zinc Chromate Series 8200	Zinc phosphate Series 8600
Total solids, by volume	61%	58%
Total solids, by weight	79%	78%
Non-volatile resin, by weight	28%	29%
Pigments, by weight	51%	50%
Density kg/L	1.55	1.52
Mixing ratio: Hardener 864 to Base Component, by volume	1:5.2	1:5.8
VOC content	-	241 g/L

#### RECOMMENDED USES

Direct to metal coatings for protection of exterior exposed and interior steel surfaces in industrial, coastal & urban environments. Ideal for application over TINOPOXY ANTI-RUST & ZINC RICH PRIMERS to reinforce the effectiveness of corrosion prevention and serve as an intermediary layer for finishing coats, especially in marine & industrial environments with very high atmospheric corrosion and/or on surfaces to be immersed or buried.

**Zinc Phosphate, Series 8600** is more suitable for application in buildings, hydraulic engineering works, plants etc...



1-8200 - 8600 / 06-17 pg. 1/3

# Where to Get Info (cont.)

## • Material & Process Manager



- Materials that may be used
- SDSs of the materials
- Technical Data Sheets (TDSs) for materials
- Throughputs of materials/Application rates

## Where to Get Info (cont.)

- Emission Factors

- Site Specific
- Industry/Process Specific
- AP-42
  - Combustion
  - Process information (can use similar if not exact)
  - Controlled vs. Uncontrolled

$$\begin{array}{l} \text{Activity (A)} \\ \times \text{Emission Factor (EF)} \\ \times (1 - \text{Control}[C]) \\ \hline \text{Total Emissions (E)} \end{array}$$

<https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-Compilation-air-emissions-factors>



# Complete Application

Make sure have ALL forms needed

- General forms and unit specific forms

All supplemental information

- PTE calcs
- Maps
- Process Flow Diagrams
- Technical support document

# State Sites

- Ohio

<https://www.epa.ohio.gov/dapc/permits/permits>



- Kentucky

<https://eec.ky.gov/Environmental-Protection/Air/Pages/Air-Permitting.aspx>



- Indiana

<https://www.in.gov/idem/airquality/2495.htm>



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# Complete Application Package



Make sure RO signs application



Read submittal instructions

Online (Ohio eBiz)  
Emailed  
Hard copy (how many copies)  
Confidential vs Non-confidential versions

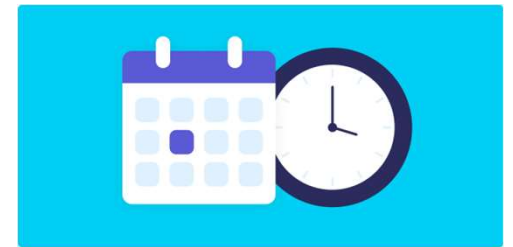


Pay attention to additional requirements for application posting

IN requires it to be posted in local library

# Permitting Timelines

- Application review timelines
  - Ohio (general 2 – 6 months)
  - Kentucky
  - Indiana (regulatory time between 30 – 270 days)
    - <https://www.in.gov/idem/airpermit/resources/timeframes-and-fees/>
- Possible public comment period



# Compliance



# University of Cincinnati Campus Footprint



- 31,650 student FTE
- ~10,000 faculty & staff
- 236 acres
- 115 buildings
- 8,258,400 square feet
- Academic, residential, athletic

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# University of Cincinnati Utilities

- Provide electricity, steam for heat, and chilled water for cooling 100+ UC buildings and several adjacent hospitals
- 2 separate utility plants
- Title V air permit



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# Know Your Permit!

- Read and understand your permit
- Highlight action items
- Renewal – compare to previous permit for changes





# Develop a Compliance Plan

- Identify each emission limit or operational restriction
- Summarize compliance strategy
- Identify associated monitoring, recordkeeping, and reporting requirements
- Note any required testing
- Compliance calendar

PERMIT REQUIREMENTS				
<u>Applicable Requirement</u>	<u>Compliance Strategy</u>	<u>Monitoring/Recordkeeping</u>	<u>Reporting</u>	<u>Testing</u>
GAS: SO2 emissions ≤ 0.6 lb/MMcf NO. 2 FUEL OIL: SO2 emissions ≤ 0.3 lb/MMBtu	<ul style="list-style-type: none"> <li>▪ <i>Distillate Oil SO2: Oil shall have a heat and sulfur content which is sufficient to comply with the allowable SO2 emission limitation of 0.3 lb/MMBtu of actual heat input on an "as received" basis and a maximum sulfur content of 0.39 wt%.</i></li> <li>▪ Natural Gas SO2: AP-42 emission factor - 0.6 lb SO2/MMcft</li> </ul>	For each shipment of oil received for burning in this emissions unit, the permittee shall collect or require the oil supplier to collect a representative grab sample of oil and maintain records of the total quantity of oil received, the permittee's or oil supplier's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/MMBtu).	Quarterly - conditions in italics	None

# Remember to Include.....

- Requirements from federal regulations such as NSPS/NESHAP/MACT
- Requirements from issued PTIs that have not yet been rolled into your Title V permit
- Requirements for Insignificant Emission Units

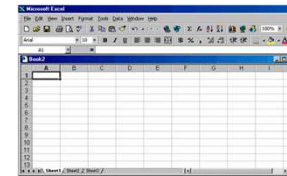


# Delegate and Designate

- Delegate tasks to owners



- Designate *record type* and *frequency*



- Designate *location* of record



- Designate *report format* and understand *frequency*

# Fortify Your Compliance Plan

- Train task owners
- Establish goals/incentives, involve management
- Spot check records for completion and completeness
- Internal audits
- 3<sup>rd</sup> party audits
- Gaps – root cause analysis and corrective action
- Keep compliance plan up to date



# Compliance Issues/Risks

- Being unaware of regulatory change and associated impact
- Misinterpreting a requirement of a complex regulation
- Missing the applicability of a regulation
- Making an operational change without environmental impact assessment
- Exceeding a regulatory limit
- Recordkeeping issues (missing/incomplete)
- Not completing a regulatory task on time
- Missing a notification/reporting deadline
- Permit expiration

# Questions??

For more information contact:

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# Confidentiality Notice

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## Biographical Information

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Ms. Bussard is the environmental engineer for the University of Cincinnati Utilities department. She is responsible for the utility's Predictive Emission Monitoring Systems (PEMS) as well as compliance with the site's Title V air permit and other applicable state federal and state regulations.

Prior to joining the University of Cincinnati, Ms. Bussard worked in consulting with a breadth of multimedia environmental compliance knowledge, focused primarily in air and EPCRA. Ms. Bussard received a B.S in Civil Engineering and an M.S. in Environmental Engineering from the University of Cincinnati.

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Ms. Wagner is a Professional Engineer (P.E.) with over 30 years of multimedia environmental engineering and consulting experience in the areas of air quality permitting and compliance, EPCRA compliance, wastewater/stormwater and air quality dispersion modeling. Her multimedia experience in the environmental field includes a diverse work background with environmental consulting, academia, and research and development, including work with the U.S. Environmental Protection Agency, U.S. Air Force, and U.S. Army Construction Engineering Research Laboratory (CERL). Areas of experience include regulatory compliance with the CAA, RCRA, CERCLA, EPCRA, and CWA; environmental permitting (NPDES, storm water, Title V, PSD); toxicity reduction evaluations; multimedia environmental compliance audits; stormwater and wastewater monitoring; air dispersion modeling; and drinking water cross-connection control and evaluation. She provides on-going, environmental compliance assistance to a wide variety of industrial clients.

Ms. Wagner received a Bachelor of Science Degree in Chemical Engineering from The University of Cincinnati in 1990. She has also completed Post-Graduate Studies in Environmental Engineering at the University of Cincinnati from 1990-1993.