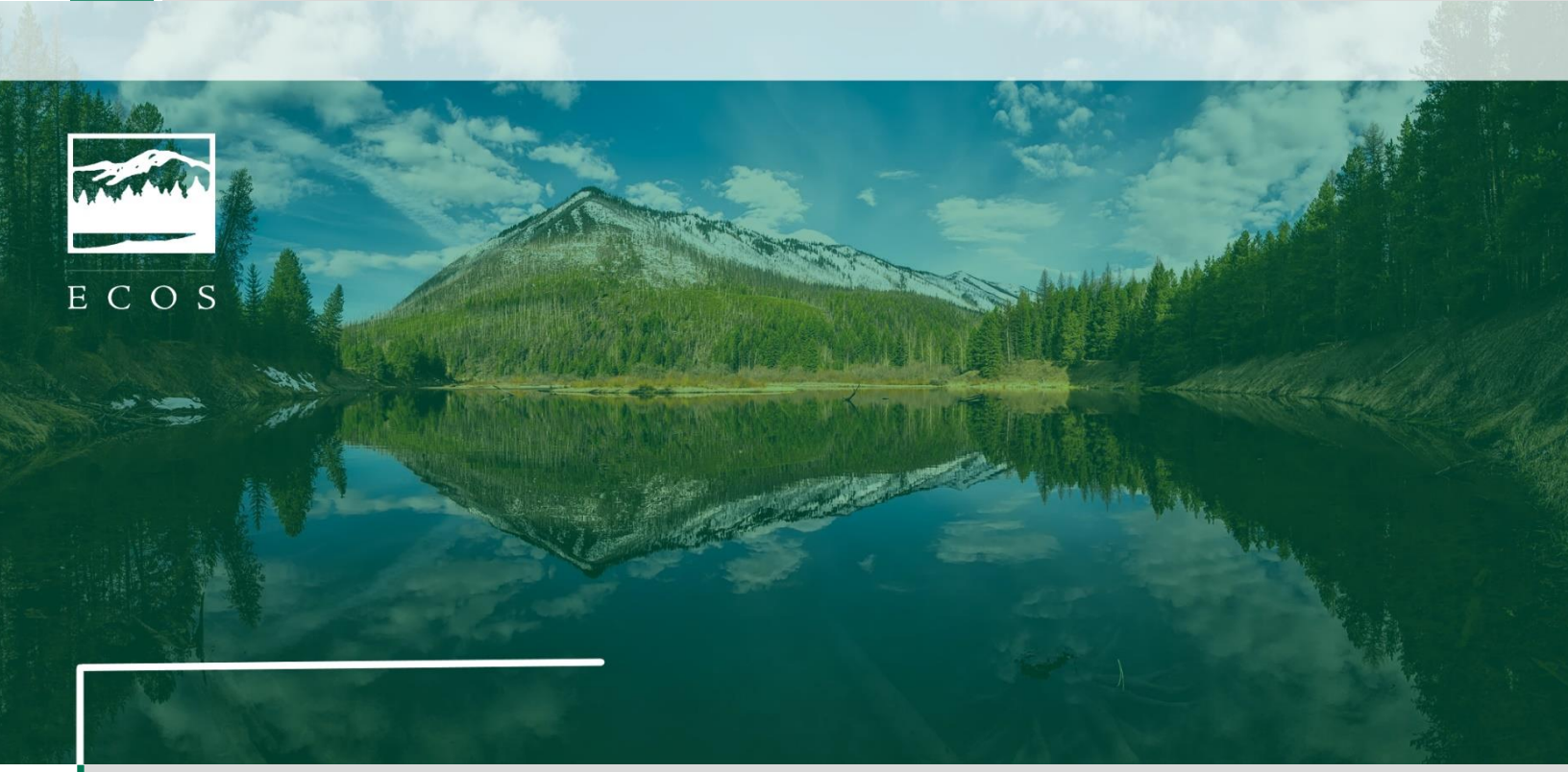

# Alternative Compliance Monitoring Strategies

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## Overview

The nation's major environmental statutes provide avenues for states to assume delegation, authorization, or primacy to implement these laws. Through U.S. EPA-developed documents known as Compliance Monitoring Strategies (CMS), states and the U.S. Environmental Protection Agency (U.S. EPA) ensure state compliance with environmental laws. State program offices may, with U.S. EPA regional approval, diverge from the requirements outlined in these strategies through use of an Alternative CMS (ACMS). Use of an ACMS is a relatively common practice among state agencies, with substantial variation among states and programs as to the type and scope of flexibilities afforded in these agreements, their level of formality, and other factors. States may pursue U.S. EPA approval of these alternatives in order to inspect facilities outside of a fixed schedule, or to gain flexibility to conduct more compliance evaluations at smaller generators to reach more of the total regulated universe. This report provides a national overview of ACMS adoption and highlights state case studies.

## Introduction

Compliance monitoring, including inspections, is the primary tool upon which our nation's environmental regulatory enterprise relies to ensure that environmental laws are effective in protecting the physical environment and human health. According to U.S. EPA, the agency and its regulatory partners perform compliance monitoring activities for 44

programs authorized by seven statutes.[1] These activities include conducting inspections and investigations, and overseeing imports and exports of environmental substances.

Monitoring environmental compliance in the United States is a significant undertaking, and due to resource constraints, government agencies are often forced to inspect a relatively small sample of the regulated facility universe. For example, of the approximately 400,000 facilities nationwide permitted under the Clean Water Act National Pollutant Discharge Elimination System (NPDES), fewer than 10% are inspected in a typical year. Reporting information shows that 60-75% of major NPDES-permitted facilities self-report breaches of compliance in a typical year, and that 20-30% of those facilities are in significant noncompliance.[2] These rates point to the critical importance of inspection prioritization, alternative strategies, and other innovations designed to stretch state agency compliance resources and maximize the positive impact of compliance assurance.

U.S. EPA publishes a variety of manuals, guidance documents, and other means of oversight to provide delegated state programs with a uniform framework for ensuring environmental compliance. The most central of these documents to this report are CMS.

## Compliance Monitoring Strategies

U.S. EPA's CMS serve as a national framework for compliance monitoring activities by EPA, state, local, and tribal agencies to ensure adequate inspection coverage of the regulated universe for general deterrence while also providing flexibility to address local environmental priorities. Some inspection goals contained in a CMS may be based on statutory or regulatory requirements. For the purposes of this report, we will address state-EPA coordination on CMS, although some of the information contained herein may apply to non-state EPA partners. CMS may establish goals for the frequency, breadth, and other characteristics of compliance evaluations conducted by the authorized enforcement agency.

Compliance monitoring activities include all means used in a compliance determination, including onsite activities (full or partial facility inspections, investigations), off-site activities (any activity conducted without the physical presence of a certified inspector such as remote video partial compliance evaluation, data review, records review, desk audit, stack test observations), and more. The ability to employ a range of compliance monitoring activities can: reduce individual facility monitoring costs and logistical challenges of travel to remote areas; create additional touchpoints with facility staff; and provide other benefits as states seek to leverage limited resources to meet federal inspection requirements. For more information, see the September 2022 ECOS State Survey of Offsite Compliance Monitoring: A Summary of Findings. CMS also improves communication between states and U.S. EPA regions on compliance monitoring programs and provides a consistent and transparent baseline for U.S. EPA oversight of these programs (e.g., through the agreed-upon metrics in the State Review Framework). Guidance contained in CMS is implemented through the biennial National Program Guidances, which define program priorities, implementation strategies, and regional performance measures.

U.S. EPA has published a CMS for each of five major environmental statutes – the Clean Air Act (CAA), Clean Water Act (CWA), Resource Conservation & Recovery Act (RCRA), Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA), and Toxic Substances Control Act (TSCA). Some of these documents may be limited in scope to key programs or provisions within the statute, depending on the nature of compliance monitoring activities (both those that are

[1] Compliance Monitoring Programs, U.S. Environmental Protection Agency (EPA), 2020
[2] Source: E-Enterprise Webinar, *Machine Learning and Predictive Analytics*, E-Enterprise for the Environment, 2020

delegated to states and those performed by U.S. EPA) for various programs. EPA periodically updates these CMS documents.

## Alternative Compliance Monitoring Strategies

Under the CMS[3], states may submit for U.S. EPA approval of ACMS that effectively modify the processes contained in the CMS in order to address specific priorities, pressing needs, or areas of interest within the state. The types of flexibilities afforded to states and other authorized compliance agencies may include: reductions in evaluation frequencies for unusually large or complex facilities with good compliance track records; inspections tradeoffs allowing agencies to prioritize certain types of facilities (e.g., facilities with poor records of compliance or a different category of facilities such as small quantity hazardous waste generators); or permission to perform alternate types of compliance monitoring activities (desk audits versus onsite inspections). Additional considerations may include risk-based criteria such as potential harm to human health of environment, type and number of past violations, health and environmental indicators, national or regional priorities, new and creative approaches to compliance monitoring afforded by technological advances, and other factors. Generally, states choosing to use an expanded range of compliance monitoring activities and seeking credit under the Annual Commitment System must operate under an approved alternative plan that details the state's alternative plans and continued public health and environmental protections. National program offices also may have established pre-approved flexible approaches.

The table below shows standard inspection frequencies for the three major media CMS programs:

**Table 1: Inspection Frequencies by Media**

| Program | Recommended Inspection Frequency |
|---|---|
| RCRA Subtitle C | Inspect 20% of Large Quantity Generator and Pharmaceutical Reverse Distributor Universe (/year) goal of 100% over 5 years |
| CAA | 2 years. For major sources, 3 years. For mega sources, and 5 years. For synthetic minor (SM80) sources |
| CWA National Pollutant Discharge Elimination System (NPDES) | Varies by Source Type |

## Approaches to Alternative Compliance Monitoring Strategies

Many states that adopt alternative plans do so because they believe the additional flexibility helps them focus resources on the facilities most prone to violation or that have had less attention, thus deterring would-be violators. Below are some of the practices that states use to modify their compliance monitoring practices:

- **Risk-Based Evaluation Criteria**: States may establish a methodology to quantify the risk (and sometimes the consequence) of noncompliance. Under this methodology, all applicable facilities will be evaluated and prioritized based on factors such as: number of past violations; proximity to population centers, waterways, and other environmentally sensitive areas; and the number of laws or regulations that apply to these facilities. The risk factor outputs are considered when selecting facilities for inspection.

[3] There is currently no provision for an ACMS in FIFRA or TSCA.

- **Facility Size and Capability:** Some state programs have had success with a model of alternative compliance that depends on facility size. In some contexts, large, established facilities may have a more highly developed capacity for complying with environmental regulations, sometimes consisting of dedicated full-time staff or even an entire department. Conversely, smaller facilities could be more likely to be out of compliance and may even be unaware that they are subject to a particular regulation, for instance if a rule has recently been expanded to encompass a new economic sector or pollutant. Alternative state plans may be geared to shifting inspection resources away from large facilities and toward smaller ones. However, this approach varies depending on the rule in question, and sometimes the opposite may even be the case.
- **Voluntary Programs**: States may establish programs for regulated entities to go above and beyond their legal requirements and adopt voluntary pollution abatement practices. These programs may go by a variety of names, such as "Excellence" "Results," or "Leadership" programs. Participant facilities may be rewarded with reduced inspections or other compliance activities as part of a state's ACMS.

## State Adoption of Alternative Strategies

Based on outreach to state agencies, U.S. EPA, and state media associations, ECOS has compiled a list of states that currently have ACMS in place for the various media programs. This information demonstrates that there is widespread adoption of ACMS among state environmental agency programs. There is some variation among regions, with U.S. EPA Region 9 showing no ACMS adoption and several regions with fewer than three ACMS in place among all states and programs. However, it is not clear to ECOS that this variance is due to any intentional practice on the part of states or EPA regional offices.

**Table 2: Adoption of Alternative Compliance Monitoring Strategies by Media**

| Program | States Implementing ACMS | State Count |
|---|---|---|
| RCRA Subtitle C | AR, CT, GA, IL, IN, LA, MA, ME, MI, MN, NH, NJ, NY, OH, OK, TX, VA, WI | 18 |
| CAA | AK, IL, IN, LA, MA, MN, NJ, NM, OK, OR, TX | 11 |
| NPDES | AL, AR, CO, CT, IA, IL, IN, KY, LA, MI, MN, MO, MT, ND, OH, SD, UT, VA, WI, WY | 20 |

## Hazardous Waste

### RCRA Subtitle C Compliance Monitoring Strategy

U.S. EPA's December 2021 RCRA Compliance Monitoring Strategy establishes an inspection framework for hazardous waste generators; treatment, storage, and disposal facilities (TSDF); and other facilities regulated under RCRA Subtitle C. These facilities fall within several categories, including:

- Large Quantity Generators (LQGs), which generate more than 1,000 kg or more of hazardous waste per month
- Small Quantity Generators (SQGs), which generate between 100 and 1,000 kg per month
- Very Small Quantity Generators (VSQGs; formerly known as Conditionally Exempt SQGs or CESQGs), which generate 100 kg or less per month
- Treatment, Storage, and Disposal Facilities (TSDs or TSDFs), and
- Pharmaceutical Reverse Distributors (RDs).

As shown in the Table 1 inspection frequency chart, the RCRA CMS-required inspection frequencies pertain only to LQGs and RDs and provide that states inspect 20% of the "universe" of known LQG facilities and RDs within their jurisdiction every year, with a goal to inspect each individual LQG facility at least once every five years. The "universe" is updated via U.S. EPA's Biennial Reporting System (BRS).

The other facility types with inspection frequencies presented in the CMS are TSDFs – annually for government-owned or operated TSDFs, and biennially for non-government TSDFs. These frequencies are set forth in the RCRA statute, and OECA establishes corresponding annual commitments. The CMS does not set minimum inspection frequencies for SQGs, CESQGs, TSDs, non-notifiers, or other types of facilities regulated under RCRA. However, states may substitute some portion of their 20% LQG/RD inspection resources for these other facilities under an approved ACMS. This is the most common feature of states' alternative waste plans.

In the RCRA CMS, Appendix H establishes a framework for pre-approval of alternative plans, which appears to be unique to the waste program. Specifically, Appendix H sets out four "pre-approved alternative approaches," that require a more limited review by the region. These alternatives are outlined below:

1. **The 80% Approach**: States would inspect LQGs that account for at least 80% of the waste generated by the LQGs and non-LQGs (according to U.S. EPA figures). States would reallocate any resources saved by taking this approach to activities that support other goals identified in its alternative plan.
2. **The Greater Than Five Ton BRS Approach**: Given how RCRA statute defines large vs. small quantity generators (based on maximum weight per month), it is possible for the highest SQGs to generate more waste than the lowest LQGs. This option allows for flexibility within this range of overlap. Under the >5T approach, the 20% inspection requirement goal would be based on a reduced LQG universe with facilities generating less than five tons omitted.
3. **The Straight Trade-Off Approach**: Under this approach, states can inspect as few as 10% of their LQG universe and reallocate all resources saved to inspecting other RCRA handler facilities.
4. **The Retail Pharmacy Differentiation Approach:** This approach arose from the December 2021 updates to the RCRA CMS and recognizes chain retail-pharmacy stores as "non-traditional" LQGs. This universe is distinct from traditional LQGs and allows states to remove pharmacy stores when defining their LQG universes for compliance monitoring. Under this approach, states would inspect 5% of that nontraditional chain pharmacy universe each year (while continuing to inspect 20% of the remaining traditional LQG universe).

In addition to these four pre-approved approaches, the state may design its own flexibility alternative and submit it for joint Regional-Headquarters review. ECOS notes that for other media, the state and/or region will typically involve the OECA program office at EPA's headquarters in review of the plan.

Aside from the pre-approved approaches, one common feature among RCRA ACMS is the notion of traditional versus non-traditional LQGs. Given how LQGs are defined within RCRA, certain regulated entities that typically do not generate the requisite 2,200 lbs./month of non-acute hazardous waste are incentivized to notify as an LQG as a precaution in the case of unanticipated overages in their generation of greater than 2.2 lbs. of acute hazardous waste related to pharmaceutical waste generation. This group includes a number of big box retailers and chain pharmacies such as CVS, and these facilities eventually came to make up over 30% of some states' LQG universes. Inspections of these facilities tended to yield fewer and less significant findings of noncompliance than typical LQG inspections. Recognizing that these are non-traditional LQGs, U.S. EPA provided this approach in the most recent CMS. As a result, many states sought to gain efficiencies by singling them out as "non-traditional LQGs" and negotiating a sub-20% inspection target for their non-traditional universe. The terms "traditional LQG" and "non-traditional LQG" are not defined in the RCRA CMS but were negotiated and defined between state agencies and EPA regional offices on an individual basis.

In 2019, EPA finalized the hazardous waste "pharmaceutical rule," which prohibited the sewering of hazardous waste pharmaceuticals and set standards for their management and reverse distribution. As the pharmaceutical rule has been implemented by the states since the rule's adoption in December 2021, the rule has also had the effect of allowing many non-traditional LQGs to re-notify as SQGs or VSQGs. The addition of RDs in the December 2021 RCRA CMS aims to allow regulators more specificity to distinguish these facilities.

## State Case Studies for RCRA ACMS

**Georgia: Managing Traditional and Non-traditional LQGs**

Georgia's experience clearly illustrates certain strengths of ACMS – as well as some of their shortfalls. The Georgia Department of Natural Resources' (GA DNR) waste program has operated under three different compliance regimes since 2015, each with a well-defined rationale and in response to programmatic changes. Georgia initially operated under one of the pre-approved RCRA ACMS options, the "straight tradeoff." Under this ACMS plan, GA DNR would inspect a limited quantity of small- and very small-quantity generators that would count toward its 20% LQG target at an established conversion rate. This arrangement initially helped Georgia focus more of its compliance efforts on smaller generators, which it understood to be somewhat more prone to noncompliance.

However, GA DNR encountered some difficulties related to reporting and tracking inspections in RCRAInfo that began to undermine the benefits of their alternative plan. These difficulties were related to churn between the various generator categories when generators in the state would re-notify as a different category mid-year due to unforeseen changes in their waste generation quantity. DNR estimated that this churn affected between 10-30% of their LQG universe. This caused occasional inspection shortfalls and confusion among compliance staff when an LQG it inspected would re-notify as another category that counted less toward its inspection quota. These issues, plus the added burden of explaining them to EPA regional staff, led Georgia to adopt a different alternative plan in 2018.

In 2018 DNR implemented a traditional/non-traditional LQG ACMS framework after hearing from a Region 1 state that had a similar framework in place. The arrangement that GA DNR negotiated with EPA Region 4 held that GA DNR would inspect 20% of its traditional LQG universe and 10% of its non-traditional universe, annually. Finally, after two years of operating under this ACMS, the pharmaceutical rule was implemented in Georgia such that a significant number of non-traditional LQGs re-notified as SQGs or VSQGs. Due to this reduction in LQGs, GA DNR determined it was no longer efficient for it to continue drawing the traditional/non-traditional distinction, and it was able to revert to a standard CMS approach for FY 2020.

GA DNR's experience serves as a valuable example for other states, as it shows that even when an ACMS is actively and competently managed, it is not a silver bullet. Regulatory or universe changes can sometimes offset the benefits that ACMS provide to state programs, and there is certainly no "set it and forget it" option.

**Oklahoma: Considering Universe Size**

The hazardous waste program at Oklahoma Department of Environmental Quality (OK DEQ) is a relatively recent ACMS adopter. Before entering into an ACMS in 2019, the program operated under the standard CMS requirements because it was able to reach its 20% LQG target primarily with existing resources and staffing levels. This was in part due to the relatively small size of Oklahoma's LQG universe, which hovered around 200 facilities. As in other states however, this number increased in recent years as more pharmacies and big-box retailers began notifying as LQGs, and the program's compliance resources were stretched thin. In 2020, OK DEQ approached EPA Region 6 seeking an

ACMS, and the state gravitated toward the preapproved "straight tradeoff" option that had previously been adopted by other R6 state agencies including the Texas Commission on Environmental Quality. This plan was in place for only a few months before the COVID-19 pandemic disrupted normal hazardous waste compliance activities, but OK DEQ is optimistic that it will see returns on its new flexibility, both in terms of operational efficiency and environmental results.

OK DEQ hopes to eventually negotiate flexibility in one burdensome area, namely the requirement that it conduct annual hazardous waste inspections of the five military facilities located in the state which have shown to have low rates of noncompliance. Military facility inspections are more time-consuming than those of typical LQGs, and the required annual inspection frequency is significantly higher than for LQGs. Unfortunately, the annual inspection requirement for these federal facilities is statutory, so potential flexibility for states will likely require a different intervention than through the CMS.

**Wisconsin: Leveraging E-Enterprise for the Environment and ACMS**

The hazardous waste program at Wisconsin Department of Natural Resources (WI DNR) operates under an ACMS that enables state and EPA inspectors to share inspection duties for the mandatory 20% of the state's LQGs. This is a custom alternative plan, not one of the four pre-approved options. It is also unique among the case studies in this report because it is directly related to a state effort under the E-Enterprise for the Environment initiative. WI DNR's workload tradeoff flexibility to inspect less than 20% of its LQGs was approved in exchange for the state contributing a portion of their compliance staff time to develop mobile ready inspection forms.

The magnitude of Wisconsin's variance is modest: EPA Region 5 is committed to performing at least six LQG inspections annually, and WI DNR performs 92. However, DNR expects to see long-term benefits such as reduced data management efforts, improved violation discovery rates, improved timeliness and response to action by facilities, and potentially improved consistency.

## Air

**Clean Air Act Stationary Source Compliance Monitoring Strategy**

EPA monitors compliance for a number of program areas under the Clean Air Act (i.e., acid rain, asbestos, and wood heaters). However, stationary sources are the only program area covered by the agency's Air Compliance Monitoring Strategy. The minimum recommended inspection frequency section of this document states that a Full Compliance Evaluation (FCE) including a site visit should be conducted, at a minimum, once every two federal fiscal years at all Title V major sources. However, agencies may conduct off-site FCEs of certain sources, in which case the agency is expected to conduct an onsite FCE at least once every five years. One exception to this policy is major sources that are classified as mega-sites, for which an FCE should be conducted at least once every three federal fiscal years. Synthetic Minors, known as SM80s, have a minimum FCE frequency of once every five federal fiscal years. Although stationary source FCEs are the central element of the CMS, the document also lays out additional inspection types, provisions for other air pollution sources, and reporting/oversight provisions.

## State Case Studies for Air ACMS

**Indiana: Focus on Gas Compressors**

The Indiana Department of Environmental Management (IDEM) Air division has been using some form of ACMS for at least 20 years, and they are negotiated with EPA Region 5 each year as part of the CMS and biannually as part of the state's Performance Partnership Agreement. EPA Region 5 has been very supportive of the state's ACMS and runs proposed strategies through EPA HQ. The three existing flexibilities are outlined below:

Gas Compressors; Gas/Oil Turbines: IDEM negotiated a reduced inspection frequency of one FCE every five years for CAA Part 70 major gas compressor stations and gas/oil turbine sources. This flexibility has been in place for the last 20 years and is justified by these facilities' good compliance records (risk-based). An FCE including an onsite visit is conducted, at a minimum, once every five years at all these Part 70 major facilities.

Mega-Site Contractors: IDEM has used an ACMS for contractors associated with mega-sites since 2017. The mega-sites include three integrated steel mills and 29 of their contractors. IDEM conducts an FCE of each of the contractors associated with the mega-sites once every three years similar to the mega-sites themselves.

Surface Coating ERP: In 2009, IDEM reallocated some of its compliance and enforcement resources to form an Environmental Results Program (ERP)-type approach to identify unpermitted surface coating sources and sources possibly subject to surface coating National Emission Standards for Hazardous Air Pollutants (NESHAPs). This program spanned several sectors that conduct surface coating and enabled IDEM to be more effective in assuring sources complied with the surface coating and permitting requirements. IDEM conducted FCEs of 70% of Part 70 sources once every two years and conducted FCEs of the remaining 30% of the Part 70 sources once every three years except for the gas/oil turbine sources noted above. Sources with reduced-frequency inspections included: EPA's National Performance Track members (no longer an active program); IDEM's Environmental Stewardship Program members; Paint Manufacturing; Diesel Test Cells; Gasoline Terminals; Automobile Assembly Plants; and Landfills. This group also included sources that had not had complaints and had not had any compliance issues during the previous two inspections.

**Texas: Geographic Variations**

The Texas Commission on Environmental Quality (TCEQ) air ACMS has two main components:

Alternative Frequency of Onsite FCEs: In 2012, TCEQ submitted and gained EPA approval for a plan for reduced inspection frequencies for sites in three coastal regions, with major sources receiving FCEs every three years and mega sites every five years. Off-site qualifying inspections were annual for facilities in both coastal and inland regions. Common mega Title V facilities in Texas include petroleum refineries, chemical plants with more than 100 emissions points, and any Title V source with more than 200 emissions points. Coastal facilities are within the TCEQ Beaumont (R10), Houston (R12), and Corpus Christi (R14) Regions. More information is provided in the table below:

**Table 3: Texas Major Sources by Area of the State**

| | Non-Coastal | Coastal |
|---|---|---|
| Mega | 3 | 5 |
| Non-mega | 2 | 3 |
| Offsite Qualifying | 1 | 1 |

On-site Partial Compliance Evaluations (PCEs): Also approved in 2012, this component of TCEQ's alternative plan includes a list of 13 onsite PCE types for gas compressor stations. While TCEQ is approved to perform PCEs as part of the alternative plan, facilities selected for an on-site investigation can also receive an FCE. Texas has noted that the flexibility to set the investigation frequency based on location and site category, along with the option for the PCE, have allowed regions to structure their work based on local needs. A key consideration is that TCEQ is applying the same level of effort with the alternative and has found most violations at compressor stations via off-site review.

## Clean Water

**NPDES Compliance Monitoring Strategy**

NPDES is the primary regulatory program under the CWA for which compliance activities are generally conducted by state agencies. There are 19 different types of NPDES inspections identified in EPA's NPDES Inspection Manual, which encourages inspectors to "choose the type of inspection to be conducted based on the compliance status of the facility, the information needed from the facility, the type of facility involved, data about the quality of the receiving water, etc." Table 4 summarizes general inspection frequency requirements for the main facility types is below:

**Table 4: NPDES General Inspection Frequency Requirements**

| Category No. | Facility Type | Standard Frequency |
|---|---|---|
| 1.A | Major Permittees | One comprehensive inspection every 2 years |
| 1.B.1 | Traditional Non-Major Permittees (not releasing into a 303d waterway) | One inspection every 5 years (the following inspection types count: focused, reconnaissance, enforcement follow-up, oversight, and sludge/biosolids) |
| 1.B.2 | Traditional Non-Major Permittees (relevant to a 303d impairment) | One Full Compliance Evaluation every 5 years |
| 1.C | Pretreatment Audit | One inspection every 5 years / inspect 20% of universe annually |
| 1.C.2 | Pretreatment Compliance Inspection | At least 2 inspections every 5 years |

| | | |
|---|---|---|
| 1.C.3 | Significant Industrial User Inspections (SIUI) | Inspect 100% of universe annually |
| 1.D | Sludge / Biosolids | One inspection every 5 years for Publicly Owned Treatment Works and biosolids use and disposal operations |
| 2.A | Combined Sewer Systems | One comprehensive inspection every 5 years |
| 2.B | Sanitary Sewer Systems | Inspect at least 5% of Sanitary Sewer System (SSS) universe annually |
| 2.C.1 | Municipal Separate Stormwater Systems (MS4) | Inspect each permittee and co-permittee every 5 years (the following inspection types count: on-site audit, MS4 inspection, or off-site desk audit*.) *Off-site desk audits should not be conducted for any MS4 permittee that has not previously been subject to an onsite inspection. Each permittee should receive an onsite audit or inspection at least once every seven years. |
| 2.C.2 | Industrial Stormwater | Inspect 10% of universe annually |
| 2.C.3 | Construction Stormwater Sites | Inspect 10% of universe annually (joint state-EPA goal) |
| 2.D.1 | Large and Medium Concentrated Animal Feeding Operations (CAFOs) With NPDES Permits | One comprehensive inspection every 5 years |
| 2.D.2 | Large and Medium CAFOs Without NPDES Permits | If not inspected to date, inspect all large CAFOs that are not covered by an NPDES permit within five years to determine whether the facility discharges. Thereafter, inspect as needed based on the possibility for an unauthorized discharge. |
| 2.D.3 | Medium Animal Feeding Operations (AFOs) Without NPDES Permits | One-time initial assessment to determine CAFO designation and discharge practices |

| | | |
|---|---|---|
| 2.D.4 | Small AFOs | Inspect as-needed based on complaints, etc. for CAFO designation |
| 3.A | Pesticides | [No frequency goal] |
| 3.B | Vessels | [No frequency goal] |

In the 2014 NPDES Compliance Monitoring Strategy, EPA describes an alternative NPDES CMS plan as "a plan that includes one or more compliance monitoring commitments that deviate from [this policy.] As compared to the national goals, an alternative plan could include modified frequency of comprehensive inspections, modified compliance monitoring activities (e.g., off-site desk audit), or a combination of the two." The document outlines the ACMS review and approval process, whereby alternative plans are due to EPA headquarters (by way of the regional office) by August 15 of each year in order to be finalized by October 1, the first day of the federal fiscal year which they cover. The CMS also sets forth four requirements that proposed alternative compliance activities from the CMS must meet (items in the below list may be abridged or paraphrased from the CMS text):

1. The activity must by conducted for the purpose of making a compliance determination.
2. The activity must be conducted by appropriate personnel, as specified in the definitions of each alternative activity (see Part 3 in EPA's CMS document, 2014).
3. The approved alternative CMS plan must document the region/state's evaluation of five facility-specific questions outlined in the CMS.
4. The activity and all relevant information must be reported to the Integrated Compliance Information System (ICIS-NPDES), EPA's data system, to ensure transparency, accountability, and appropriate follow-up.

Finally, the CMS outlines three likely scenarios that could prompt a state to adopt an ACMS. These scenarios are not presented as standardized options for ACMS provisions (like in the RCRA Subtitle C CMS), nor do they constitute an exhaustive list of such scenarios. They are as follows:

A. For major facilities evaluated under the five alternative CMS considerations, a region or state could propose the following alternative approach: every five years conduct at least one comprehensive on-site inspection, one focused compliance inspection, and one off-site desk audit.
B. In cases where an MS4 is providing inadequate oversight of active construction sites and industrial stormwater dischargers, the region or state could increase MS4 inspection frequency in exchange for reduced inspections of construction or industrial dischargers. This would hopefully result in higher compliance in the future at the facilities under the MS4's jurisdiction, versus increased compliance at just a few individually inspected facilities.
C. A region or state could be approved for decreased inspection frequencies in a given facility type or program area in order to reallocate those resources toward exploration or ground-truthing of innovative compliance monitoring approaches or techniques.

In addition to compliance monitoring, since FY2018, 47 NPDES delegated states and EPA have worked very closely to reduce significant noncompliance (SNC) among facilities permitted under the CWA. In November 2022, EPA announced that the SNC rate had been cut by 50% over five years. This achievement was achieved in part by EPA meeting with individual states more than 600 times to discuss strategies to address this category of violators. As this report notes, compliance monitoring encompasses a range of activities to achieve desired outcomes.

## State Case Studies for NPDES ACMS

**Montana: Economizing Through Training Conferences and Inspection Circuits**

The Montana Department of Environmental Quality (DEQ) is one of 19 states known to have ACMS plans in its water compliance monitoring programs. DEQ's experience negotiating flexibilities with its regional office has been relatively informal, and changes to its inspection commitments are typically conducted through in-person meetings with EPA Region 8 representatives based in the state capital of Helena. While the DEQ has garnered some quantifiable variances from the standard frequency requirements for different inspection types, some of the most interesting aspects of its compliance monitoring programs are the secondary measures addressing challenges of seasonality and geographic dispersion.

The most clear-cut flexibilities that Montana has negotiated are reduced inspection targets for two facility types: for construction stormwater general permits (category 2.C.3), DEQ inspects 5% of the universe in lieu of the CMS target of 10%; and for traditional minor facilities (category 1.B.1), DEQ inspects approximately 10% in lieu of the 20% target. Montana's NPDES grant workplan, which spells out the agreement with EPA regarding these flexibilities, does not require DEQ to perform specific alternate compliance assurance activity in exchange for these variances. However, DEQ has held several training events (both virtual and in-person) for construction stormwater permittees.

For both facility categories for which DEQ has negotiated variances, the rationale is mostly the agency's limited capacity to perform inspections. This is not primarily due to lack of program funding or staff inspectors, but rather to two particular geographic challenges. First, the inspection season in Montana is especially short because of hazardous road conditions during the long winter. Second, the state's large area and low population density mean that permitted facilities are geographically disparate, and long drives to facilities can greatly increase the amount of time required to perform an onsite inspection. Although DEQ established four regional offices (established around 2014), these challenges still necessitate other measures to conduct inspections in the most efficient manner possible. The trainings for construction stormwater permittees are one such measure, and others include the use of multimedia inspections and inspection "circuits" in which inspectors link multiple inspections along an established, geographically optimal route.

The state also hosts a stormwater conference roughly every five years and hosts training for municipal wastewater operators a few times annually through the Montana Water School. The DEQ's Compliance Assistance Team reaches out to major and minor facilities to provide facility-specific compliance assistance. Even despite the challenges, DEQ's program surpasses the negotiated inspection targets for construction stormwater permittees and traditional minor facilities with some regularity, and continues to implement a robust inspection program and deter noncompliance.

**Ohio: High Expectations in a Large Universe**

The Ohio Environmental Protection Agency (Ohio EPA) is another agency that has NPDES compliance monitoring variances in two facility types in its ACMS, dating to 2017. However, unlike Montana, one of Ohio's main challenges is the sheer number of permitted facilities: 40% of NPDES permits issued in U.S. EPA Region 5 are in Ohio. For major permittees (category 1.A), Ohio conducts triennial inspections rather than biennial (this flexibility is included in the standard CMS for facilities meeting certain compliance criteria using the Inspection Targeting Model), and for pretreatment compliance inspections (category 1.C.2), the negotiated frequency is once every five years rather than twice. Region 5 recognizes the difficulties states face in meeting the SIU goal established through the regulatory requirement. The Region advises each state to set a coverage commitment in this category that includes onsite inspections to the maximum extent possible, as well as other compliance monitoring activities such as review of real-time data and self-monitoring reports to meet the 100% goal. Ohio, with its large universe of facilities in this category, has developed a strategy of this kind for this commitment category. Finally, Ohio has considered negotiating flexibilities for pretreatment audits (category 1.C) but has not pursued that officially. The rationale for Ohio EPA's variances is that its inspectors, though highly qualified and efficient, have a difficult time meeting CMS requirements in the aforementioned categories due to their especially large permittee universe.

Also, like Montana, Ohio EPA has independently instituted alternative measures to help promote compliance in light of structural shortfalls in its compliance monitoring activities relative to the CMS requirements. One such alternative measure is a type of compliance-enforcement vertical integration, in which the same county inspector who issues a Notice of Violation for a facility in Significant Noncompliance (SNC) manages that case all the way through to resolution. Ohio EPA believes this has lowered the SNC rate and increased the percentage of enforcement actions resolved than is typical in other states. Another compliance enhancing measure implemented by Ohio EPA is the use of custom-built data collection and evaluation platforms. Ohio EPA's eBusiness Center (E-Biz) is used by the regulated community to submit Discharge Monitoring Reports (DMRs) and other permit related reports. Ohio EPA's internal data platform, Surface Water Information Management System (SWIMS), then screens these DMRs/reports for compliance. If SWIMS detects effluent limit violation(s) or frequency violation(s) in a facility's DMR, a Preliminary Compliance Report (PCR) notification is automatically emailed to the facility on the next business day.

## Multimedia ACMS

The following three state case studies include more than one media in their ACMS initiative.

**Virginia: Multi-Program Risk-Based Inspection Strategies: Air and Underground Storage Tanks**

The Virginia Department of Environmental Quality (VA DEQ) has adopted ACMS across numerous media programs, and while the particulars of its alternative plans differ from program to program, the agency consistently applies the framework of Risk-Based Inspection Strategies (RBIS) to all compliance activities. RBIS as applied by Virginia is a quantitative methodology for identifying and triaging inspections based on specific criteria related to the risk of environmentally damaging infraction. Criteria applied across most DEQ programs include:

- CH - Compliance History and Facility Type (3-year look-back)
- EE - Environmental Excellence (DEQ VEEP Participation)
- ES - Environmental Sensitivity
- MM - Multimedia Applicability
- AES – Agency Exposure/Sectors

VA DEQ programs assign numerical scores for these criteria. For instance, a metric for compliance history would be findings in previous inspection reports; for environmental sensitivity, it could be proximity to impaired water bodies, populated areas, or certain geological features; and for agency exposure, a metric could be complaints, agency strategic priorities, or news stories. To quantify many of the criteria, VA DEQ uses data from the commonwealth's Comprehensive Environmental Database. The environmental programs at VA DEQ that have RBIS plans are: Air Stationary Source (through FY2021); Hazardous Waste; Solid Waste; Underground Storage Tanks (UST); Virginia Pollutant Discharge Elimination System (VPDES), and Virginia Pollution Abatement program. Below we take a closer look at two particularly interesting RBIS programs – Air Stationary Source and UST.

Air Stationary Source: In FFY2009, EPA Region 3 approved a RBIS to provide VA DEQ with flexibility in prioritizing inspections. According to the RBIS document, VA DEQ "agrees to conduct a certain number of Full Compliance Evaluation (FCE)s at specific facilities and is able to reallocate excess inspector hours to risk-based inspections."

VA DEQ initially sought this flexibility because of budgetary and programmatic impacts stemming from the 2008 financial crisis. Under this arrangement, VA DEQ may choose to identify CMS facilities due for FCEs for reduced frequency, and use the hours made available by postponing an FCE to complete FCEs for other higher risk CMS sources that may not have been targeted otherwise. The main perceived benefit of this flexibility on the part of VA DEQ is as a backstop, as VA DEQ typically does not have much difficulty meeting the inspection targets set forth in the EPA air CMS. However, additional flexibility could be useful on the accounting side; due to grant requirements, VA DEQ is unable to use CAA §105 funds for inspection of non-major sources. As a result, VA DEQ's inspections of these sources are financially constrained even if VA DEQ's RBIS plan means they are not administratively constrained. As of FY2022, VA DEQ implements a traditional CAA CMS plan.

Underground Storage Tanks (UST): Under Virginia's UST RBIS plan, "DEQ regional staff will inspect high risk facilities at least once every two years. Medium risk facilities will be inspected at least once every three years. It is DEQ's intention to inspect all facilities within three years as resources allow; however, DEQ recognizes that low risk facilities may fall into a four or five-year cycle, depending upon available resources."

**Massachusetts: Dual-Media ACMS Plan**

Because the Massachusetts Department of Environmental Protection (MassDEP) air and waste programs are jointly managed, its ACMS plan covers both Air Stationary Source and RCRA Subtitle C inspections. It is a risk-based inspection strategy that largely falls along lines of facility size, with inspections of larger facilities with established and effective compliance programs substituted for inspections of smaller facilities targeted specifically for their higher risk of noncompliance. However, MassDEP leverages the hybrid nature of its compliance program toward its ACMS in interesting ways. According to language in the agency's 2020-2023 Performance Partnership Agreement:

> To increase compliance within smaller quantity generator facilities and to still meet EPA's 20% LQG requirements, MassDEP can substitute two small quantity generators for one large quantity generator. These generators are also being inspected for air compliance as the inspectors conduct multimedia inspections that include air…. Looking at the final measurement report for fiscal year 2017, it can be found that MassDEP's ACMS plan to inspect 101 small quantity generators resulted in 62 enforcement actions. While the plan to inspect 52 Large Quantity Generators resulted in 24 enforcement acts. This enforces the notion that to increase compliance by Small Quantity Generators, ACMS was needed.

Some common small facilities targeted by MassDEP's risk-based methodology include pharmacies and dry cleaners.

**Louisiana: A Multimedia Approach**

The Louisiana Department of Environmental Quality (LDEQ) utilizes an ACMS in three program areas: RCRA Subtitle C, CAA Title V, and the CWA NPDES program. The state took this approach to transition all programs at once to allow consistency in the agency's annual legislative reports.

In its proposal, LDEQ estimated that the agency's surveillance division's overall level of effort will remain the same, but the number of inspections will increase due to the changes in types of inspections that will be performed. The previous performance targets resulted in facilities being inspected on a fixed schedule and eliminated the ability to inspect the remaining facilities out-of-cycle. The state found some facilities that had not been scheduled for inspection were in non-compliance during investigations of citizen's complaints.

LDEQ's Clean Air Act AMCS reduced by 50% the Title V Major Facility inspections due to a high compliance rate and self-reporting requirements. In turn, the agency aimed to inspect 50% of Minor Sources and 25% of Synthetic Minors on an annual basis, with remaining inspections determined by regional determination of relevant environmental concerns. In addition, Minor General Source Permits are inspected at a rate of 1.5 times the amount of Title V Facilities inspected and by sector initiatives which focus on certain facilities, regulated pollutants, and/or subsets of regulatory requirements annually.

Since 2007, LDEQ has investigated more of the RCRA universe by conducting investigations at small quantity generators (SQGs), conditionally exempt small quantity generators (CESQGs), and other RCRA regulated facilities. Flexibility to conduct more compliance evaluations at smaller generators allows the agency to reach more of the total universe and address priority areas. The agency opted for Alternative 3 – the Straight Trade-off Approach – which allowed LDEQ to inspect 10% of the LQG universe annually and use a combination of other facilities to make up for the other 10%. The agency anticipated these changes would help correct outdated or incorrect information in RCRAInfo and LDEQ's internal compliance database.

LDEQ's NPDES ACMS reduces the standard Major Source requirement of inspecting 50% of facilities annually to 30% of majors while inspecting 20% of facilities designated as significant minors. In addition, 9% of facilities designated as Class II General Sanitary Permits are inspected each year. These Class II permits are generally not inspected under the standard CMS, but LDEQ notes that many discharge into impaired water bodies and struggle to maintain compliance.

LDEQ began collecting data in 2018 and submitted its proposal in 2019. The ACMS were approved in 2020 and reapproved for FFY 22 and FFY 23. After implementing the ACMS, LDEQ saw a need for an increased number of "informal" enforcement proceedings due to a non-compliance increase. The agency also made changes to forms, checklists, and guidance documents to better accommodate smaller facilities.

## Looking Forward

The use of ACMS is clearly a widespread practice among state environmental agencies. Many state agencies' practices reflect a flexible approach to better address state priorities with existing resources. States continue to develop and refine techniques to best address program goals for protection of human health and environment. There is wide variation between states and programs with regard to the type and scope of flexibilities afforded in ACMS, their level of formality, and the programmatic aims they are intended to achieve. This variation in ACMS makes it an adaptable tool for state agencies, and one that is difficult to compare across states. ECOS hopes that the information in this report serves to share lessons learned across states.

In addition to the techniques listed above, many state programs interviewed by ECOS for this report had voluntary compliance assistance or "Environmental Excellence" programs (as with Virginia and Illinois), or state-level statutes that are more stringent than those of their federal counterparts (as in the case of Alabama's CAFOs program) in addition to an ACMS. It seems plausible that ACMS may either play some role in incentivizing or enabling states to establish and experiment with such programs or reflect approaches already in practice.

**Artificial Intelligence (AI), Machine Learning, and Predictive Analytics**

One prominent development in environmental compliance is the rise of AI, machine learning, and predictive analytics. These related (but not identical) practices involve the application of technology to a set of environmental data to make predictions about facilities' likelihood of compliance status. In the case of predictive analytics, data are used to provide a best assessment of what may be seen at a given facility, whereas with AI and machine learning the technology is an adaptive system of algorithms that learns from its data inputs and customizes itself to the task at hand as it is tested against new datasets. In 2020, U.S. EPA launched the "National Targeting Center" for states, tribes, local governments, and U.S. EPA regional offices to support an evidence-based approach to enhance and promote prioritization capabilities for enforcement and compliance assurance programs at the federal, state, tribal, and local levels. In Summer 2021, U.S. EPA released to states, tribes, and local governments information on the likelihood of RCRA Large Quantity Generator facilities having significant violations based on historical data and other factors. The release of predictive analytic scores followed several years of data comparisons from randomized and priority inspections. The model yielded a substantial increase in efficiency of detecting hazardous waste violations compared to current practice and without impacts to current operational costs. Data indicated an approximate doubling of violation detection rates[4].

In addition to prioritizing inspections, states and EPA are also concerned with under-permitted or non-permitted facilities such as with Concentrated Animal Feeding Operations (or CAFOs) and the recent rise of cannabis farms. According to a 2008 Government Accountability Office report, "no federal agency collects accurate and consistent data on the number, size, and location" of CAFOs; however, the same report makes a rough estimate that the number of CAFOs nationwide has increased dramatically from 3,600 in 1982 to 12,000 in 2002.[5] Detection of such facilities is an important function to fully protect human health and the environment. Using satellite imagery and related programming, computers can be trained to successfully identify images that align with specific facility types, providing inspectors with additional information to use in a risk-based inspection approach and other potential risk scenarios. In one application, a university AI model detected more CAFO facilities in a matter of days than a manual scanning program had found in over 3 years.[6]

Nearly half of U.S. agencies across all levels of government have already experimented with AI or machine learning,[7] and these practices are poised to change environmental compliance in significant ways. The current ACMS system appears fully capable of accommodating state use of AI for inspection prioritization. Unlike inspection prioritization however, facility detection applications are not fully accommodated by the ACMS system. States that deploy AI to detect nonpermitted facilities may expand their regulated universe (and thus their workload), and such program investments may be considered for ACMS flexibilities.

AI and predictive analytics are the focus of many conversations in the regulatory field today and are likely to move even further into the mainstream. They may very well affect ACMS and their use in ways we have not considered.

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[4] https://www.epa.gov/sites/production/files/2021-01/documents/fy-2020-program-evaluations.pdf
[5] Government Accountability Office, 2008, https://www.gao.gov/products/gao-08-944
[6] E-Enterprise Webinar, *Machine Learning and Predictive Analytics*, E-Enterprise for the Environment, July 2020
[7] Ibid

**Notes on Methodology, Acknowledgements, and Contact Information for Future Editions**

The summary information presented in this report on state environmental agency adoption of ACMS was compiled through outreach to EPA's Office of Enforcement & Compliance Assurance, the Association of State & Territorial Solid Waste Management Officials (ASTSWMO), the Association for Clean Water Agencies (ACWA), the National Association of Clean Air Agencies (NACAA), the Association of Air Pollution Control Agencies (AAPCA), and individual state agencies as appropriate. ECOS is grateful to the knowledgeable staff at each of these organizations, as well as in individual states, for their contributions to this report.

The information in this report is accurate to the best of ECOS' knowledge. If you believe the information regarding your agency is incorrect, or if you would like to be interviewed about your agency's compliance monitoring activities for a case study, we invite you to contact bgraves@ecos.org and cmaccartney@ecos.org. ECOS will seek to provide state-supplied corrections and helpful new information in a future edition of the report.

In addition, if your state agency has experiences with or perspectives on AI, machine learning, or predictive analytical methods that you would like ECOS to mention in a future version of this report, please coordinate with us.

**Table 5: Points of Contact for State Case Studies**

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