MULTI-AGENCY BENCHMARKING PROJECT

Source Control Working Group
Best Practices Technical Memorandum

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Summary

INTRODUCTION

In the first executive summary for the Multi-Agency Benchmarking Project, the Source Control Work Group recommended that because of the difficulties in making true comparisons of source control activities, future benchmarking efforts should focus on process benchmarking and a detailed, task-oriented analysis of source control activities.

To follow these recommendations, in 1999-2000 the Source Control Work Group focused on developing a series of best practices for use in improving both the effectiveness and efficiency of their source control programs. The group held four workshops in which they invited program staff to identify best practices for Permits, Data Management, Sampling, and Inspections. During these discussions, additional best practices were also identified for source control programs as a whole. This Technical Memorandum has been drafted as a result of these workshops. Additional best practices will be developed for other Source Control activities such as enforcement.

In the year 2001, the Source Control Work Group will revisit performance benchmarking and use what it learned from process benchmarking to better define certain source control activities, particularly permits and inspections. These improved definitions will then be used to develop a more effective performance benchmarking comparison.

BEST PRACTICES

The best practices identified by the Source Control Work Group as of December 2000 are summarized below.

General

An efficient and effective Source Control program:

- Develops both programmatic and individual performance measures and routinely evaluates performance against those measures;
- Develops and maintains approved written procedures covering the major topics of permits, inspections, sampling, and enforcement;
- Periodically rotates inspectors, permit writers, engineers, and sampling staff among companies and/or geographic areas;
- Uses information technology for report generation and filing and information gathering; and
- Uses cell-phones, pagers, or radios to communicate with and between field staff.

Permits

An efficient and effective Source Control program:

- Maximizes permit duration;
- Minimizes the number of steps and people involved in the permit process;
- Staggers permit renewal dates;
- Develops streamlined review and appeal processes for Industrial Users; and
- Issues control mechanisms (permits) to zero dischargers, or requires their self-certification.

Information Management

An efficient and effective Source Control program:

- Has a single integrated comprehensive database for all source control activities;
- Integrates the source control database with its Laboratory Information Management System;
- Provides access to its database for all source control staff;
- Enters data directly into electronic format whenever possible; and
- Provides a system for companies to electronically submit self-monitoring data.

Inspections

An efficient and effective Source Control program:

- Performs routine inspections using only one person;
- Makes work assignments according to geographic area;
- Uses standard inspection forms;
- Gives inspectors some enforcement authority and training;
- Performs re-inspections as follow-up to enforcements; and
- Notifies Industrial Users prior to major inspections

Sampling

An efficient and effective Source Control program:

- Performs sampling inspections at time of sampling;
- Does not notify industrial users before sampling;
- Focuses additional sampling (beyond federally required minimums) on Industrial Users (IUs) posing the greatest risk to the treatment plants;
- Provides sampling results to IUs as feedback;
- Performs after-hours compliance sampling and sampling inspections;
- Requires IU self-monitoring to promote IU self-responsibility;
- Keeps sampling crew size to minimum required for safety; and
- Develops a response plan for investigating treatment plant upsets.

General Best Practices for Source Control

INTRODUCTION	During the development of best practices for sampling, inspections, permitting, and data management the source control group identified a number of best practices that didn't fit into any of the four categories but that the group recognized were important to defining an efficient and effective source control program. These practices are listed below. Because of the way they were developed, incidental to the other lists of practices, the list is not comprehensive.
BEST PRACTICE **Pollution Prevention**	When the agency also has responsibility for pollution prevention, an efficient agency includes a segment that focuses on pollution prevention during routine inspections. All field staff who conduct inspections receive training and experience in this discipline.
BEST PRACTICE **Performance Measures**	An efficient agency sets program and individual performance measures. Programmatic performance measures may include biosolids quality, total number of inspections conducted, IU compliance, and turnaround time for permits and enforcements. Individual performance measures may include number of inspections/inspector, number of permits per permit writer, time to issue permits and enforcements, etc. An effective program evaluates such items as time required for travel, documentation, correspondence, and data evaluation when setting performance standards.
BEST PRACTICE **Procedures Manual**	An efficient and effective source control agency maintains a current and approved written implementation procedures manual that documents policies and procedures for inspections, sampling, permitting, enforcement, and other critical elements of the agency's pretreatment program.
BEST PRACTICE **Communication Technology**	An efficient agency equips its inspectors with communication devices (e.g., cell phones, pagers, in-vehicle radios, e-mail) to increase coordination among field staff and ensure coverage during emergency response.
BEST PRACTICE **Equipment**	An effective agency ensures that its inspectors have access to adequate equipment to accomplish their jobs and ensures the equipment is properly maintained.
BEST PRACTICE **Staff Rotation**	An effective agency implements a formalized rotation schedule for assignment of Industrial Users (IUs) to inspectors, permit writers, engineers, and samplers. Changing to a new set of IUs breaks the routine of site inspections and sampling. It also reduces errors and oversight that can creep in with familiarity of area and acquaintance with IU personnel.

BEST PRACTICE **Information Technology**	An efficient agency uses information technology as much as possible for report generating, report filing, database search and other pertinent information regarding a permitted discharger.
BEST PRACTICE **Staff Training**	An effective agency trains newly hired staff - inspectors, samplers, engineers, and permit writers - and provides mentors to accompany new staff in the field. New staff do not perform field work alone until they have demonstrated proficiency and knowledge of safe field practices.

Best Practices for Information Management

INTRODUCTION

Effective data management is a tool to improve efficiency and effectiveness of a source control program. Poorly planned and executed, it can be a time waster and a potential budgetary or media disaster. Best practices are suggestions to improve the effectiveness and efficiency of data management for a source control program. Although the extent of computerization of a source control program will depend on the size of the program, the budget available, and the inclination of the entire POTW to promote the use of computerized systems, some level of computerization is essential for efficiency and effectiveness.

An effective data management system can be used to generate annual reports, letters and permits, and to provide staff with useful and timely information (such as work status). Such a database saves labor and reduces errors.

A source control program with an effective database will be able to perform queries to assess program performance. Items such as number of inspections/sampling events per company, number of companies in compliance, average time to issue a permit, and average time to take an enforcement can be tracked.

DEFINITION
Data Management

For the purposes of benchmarking source control, data management means resources and/or labor associated with:

- Computerized programs and programming;
- Data base administration; and
- Data entry, including entry of self-monitoring data.

BEST PRACTICE
Integrated Comprehensive Data Bases

An efficient and effective source control program has a single integrated comprehensive database for all of its industrial pretreatment activities. The database requires data entry only once.

BEST PRACTICE
Information System Design

An efficient and effective source control program spends ample time in up-front planning, including needs analysis and process flow diagramming.

In designing a data management system, an efficient source control agency weighs the benefits of data vs. the cost of entering and maintaining it. It considers:

- Who would enter and update the data;
- Who would use the data and how often;
- What the data would be used for and its value; and
- The current availability of the data from other sources.

BEST PRACTICE
Information System Development

When selecting software for an integrated data base, an efficient and effective source control program:

- Includes maintenance in the project budget;
- Requires contractors to place code in escrow to ensure continuity in the event of contractor bankruptcy or merger;
- Maintains an action log of changes made to the system;
- Requires documentation and a training manual;
- Anticipates and allows for future expansions (e.g., GIS capability); and
- Ensures compatibility between the source control database and other agency systems.

BEST PRACTICE
Integrated Data Management

An effective and efficient source control program integrates its Pretreatment Information Management Systems (PIMS) with its Laboratory Information Management Systems (LIMS). These systems are linked so that POTW sampling data available in LIMS is also available in PIMS without requiring duplicate entry. Access to LIMS is available to source control staff on a read-only basis for treatment plant sampling data to aid in activities such as treatment plant response and local limits development.

BEST PRACTICE
Sample Labeling

An efficient data management system generates sample identification tags via automated bar coding.

BEST PRACTICE
Non-detect Results

An effective source control program establishes written policy for consistently recording and using non-detect sample results. Alternative methods include recording results in numeric format as the detection limit, half the detection limit, zero, or using the alpha format of non-detect.

BEST PRACTICE
Data Discrepancy Procedure

An effective and efficient source control program develops written guidelines and procedures to review, identify, and correct data discrepancies in sampling reports (i.e., SMRs, sampling forms, chain of custody forms, laboratory test results and test method documents, etc.).

BEST PRACTICE
Data Base Access

An effective source control program provides data base access to all source control staff in order to:

- Enhance quality of information entered the system;
- Enhance employee morale (treats all employees equally); and
- Increase communication among individual source control staff and between source control staff and other agency staff.

BEST PRACTICE
Data Base Security

To minimize inadvertent entry errors, the database provides a tiered system for access (some users have full access while others have partial or read-only access).

To avoid sabotage from disgruntled or terminated employees, the database provides the ability to restrict access quickly.

BEST PRACTICE
Data Entry

An efficient and effective source control program uses the following principles when deciding who (inspectors, permit writers, engineers or clerical staff, etc.) should enter data:

- Minimize the number of times data is handled and the number of people handling it;
- Use clerical staff to perform routine data entry (e.g., data that does not require interpretation, inspection forms completed in field); and
- Enter data directly into electronic format whenever possible.

BEST PRACTICE
Electronic Submittal of Self-monitoring Data

An efficient source control program provides a system for companies to electronically submit self-monitoring data. Agencies work with their approval authorities to develop agreements for using electronic submittals.

Best Practices for Inspections

INTRODUCTION

Best practices for inspections were developed to apply to all types of organizational structure between source control program staff and other departments or divisions that may inspect for source control. Some programs sample and inspect concurrently utilizing the same staff, while others assign sampling and inspection to different staff to be performed at different times.

DEFINITION
Major Inspection

For the purposes of benchmarking source control, "major inspection" means all resources/labor and travel time associated with comprehensive annual inspections that meet EPA requirements for annual inspections in 40CFR 403.8 as described in the EPA Guidance Document, *Industrial User Inspection and Sampling Manual for POTWs* , 1994. It also refers to inspection conducted before issuing a new industrial discharge permit (see Best Practices for Permitting—Permit Inspection).

DEFINITION
Minor Inspection

For purposes of benchmarking source control, a "minor inspection" includes all resources/labor and travel time associated with a limited non-comprehensive inspection such as:

- Routine or scheduled inspections other than major inspections or sampling inspections;
- Follow-up on enforcement action;
- Spills;
- Complaints;
- Technical assistance;
- Pollutant investigations; or
- Pollution prevention.

DEFINITION
Sampling Inspection

For purposes of benchmarking source control, a "sampling inspection" means an abbreviated inspection done at the time of sampling for the purpose of documenting operating hours, process flow, and production abnormalities at the time of inspection.

BEST PRACTICE
Inspection Frequency

Major Inspection: Minimum of once per year as required by 40CFR part 403.8 f2(v).

Minor Inspection: As needed.

Sampling Inspection: According to sampling schedule.

BEST PRACTICE **Inspection Scheduling**	In order to distribute the workload evenly, an effective and efficient source control program develops guidelines for the frequency of major and minor inspections to prepare schedules for routine or recurring fieldwork. Inspectors may prepare their own schedules with supervisor approval. Schedules must meet the minimum regulatory requirements.
BEST PRACTICE **Inspection Concurrent with Sampling**	At an effective source control program, sampling inspections are done as part of all sampling events.
BEST PRACTICE **Zero Discharger Inspections**	An effective agency develops a program to periodically inspect those categorical industries that claim to have zero discharge of process water.
BEST PRACTICE **Inspector Work Assignments**	An efficient agency makes inspection work assignments according to geographic area to reduce travel time between assigned industries.
BEST PRACTICE **Number of Inspectors Per Visit**	An efficient source control agency performs routine, scheduled inspections normally with only one person. Two persons may be required for complex facilities, enforcement inspections, training, other non-routine field activities, or when safety procedures require more than one person.
BEST PRACTICE **Inspection Notification**	An effective source control program notifies industrial users of inspections as follows: • Major inspection: Prior notification is necessary. • Minor inspection: Prior notification is optional. • Sampling inspection: No prior notification. (See Best Practices for Sampling—IU Notification of Sampling.)

BEST PRACTICE
Inspection Elements

To ensure a thorough major inspection of a discharger, an effective inspector:

- Reviews the permit prior to the field visit and is prepared to answer any IU questions.
- Utilizes standard inspection forms (an inspection form for a major inspection contains the elements of the EPA inspection form shown in the EPA Industrial User Inspection and Sampling Manual for POTWs, April 1994).
- Observes and documents all possible or actual discharge points.
- Observes and documents all processes or changes to processes that may contribute flow to a discharge.
- Observes and documents pretreatment systems.
- Evaluates the discharge sampling point(s) to determine its safety as a collection site and whether it provides a representative discharge sample.
- Documents change of ownership.
- Generates a report that will become part of the discharger's permanent file (see below—Inspection Documentation).

BEST PRACTICE
Inspection Documentation

An effective inspector generates a report for each major or minor inspection. The report includes:

- Data obtained from the activity;
- When the activity occurred;
- Who participated; and
- The outcome or future action required.

Reports are generated no later than one week after the inspection. All observations are documented in field notebooks or other appropriate forms.

BEST PRACTICE
Review of Inspection Reports

An effective agency utilizes a review process to ensure that inspection reports meet agency standards for thoroughness and accuracy.

BEST PRACTICE
Follow-up to inspections

An effective and efficient source control program follows up inspections with a letter to the Industrial User detailing results and any corrections needed. Corrections are pursued with subsequent minor inspections and/or appropriate enforcement action.

Best Practices for Permits

INTRODUCTION

The process of gathering information, analyzing facility processes, analyzing applicable regulations, and issuing effective control mechanisms (permits) can be time consuming and difficult. Most of the participating agencies indicated that they have dedicated technical staff for at least some of the permitting tasks.

DEFINITION
Permits

For purposes of benchmarking source control, permits means all resources and/or labor associated with:

- Industrial user permit discussions/negotiations;
- Permit processing;
- Plan review;
- Application processing;
- Permit administration;
- Compliance review; and
- Review/approval of plans required by an industrial user permit.

BEST PRACTICE
Permit Issuance/Renewal Preparation

In preparation for issuance of a new permit or permit renewal, an effective source control program:

- Reviews appropriate technical information;
- Reviews the file for monitoring reports, spill plans, inspection reports, and compliance history; and
- Conducts a comprehensive site visit.

BEST PRACTICE
Permitting Responsibility

At an efficient source control program will streamline the permitting process by minimizing the number of people involved in preparing and reviewing the permit and by ensuring accountability.

BEST PRACTICE
Permitting Process Oversight

An efficient and effective source control program reviews the level and amount of oversight (supervisory and technical reviews by staff other than the permit writer) in the permitting process for opportunities for cost savings to find a balance between cost-effectiveness and environmental risk.

BEST PRACTICE
Permittee Input

An efficient source control program develops streamlined review and appeal processes to give a company the flexibility to request permit changes without causing unnecessary delays and revisions or triggering a formal legal appeal process.

BEST PRACTICE **Permit Duration and Modification**	An efficient source control program maximizes permit duration. For most agencies, permits may be issued for five years. An efficient and effective source control program reviews permits periodically and modifies/amends permits as necessary without issuing new permits.
BEST PRACTICE **Fact Sheets**	An effective source control program generates a fact sheet that documents the basis for the limitations and conditions in every Significant Industrial User (SIU) permit issued. Fact sheets are described in the EPA's *Industrial User Permitting Guidance Manual*, September 1989.
BEST PRACTICE **Permitting Authority**	An effective source control program has an ordinance that supports its permitting process by: • Providing clear authority for issuing permits and imposing permit conditions; and • Allowing flexibility within carefully prescribed boundaries.
BEST PRACTICE **Site-specific Limits**	An effective source control program has legal authority to apply site-specific limits.
BEST PRACTICE **Zero Dischargers**	For categorical industries declaring no discharges of regulated waste streams (zero dischargers), an effective source control program issues control mechanisms (permits) or require self-certification *and* will conduct periodic inspections (see Best Practices for Inspections—Zero Discharger Inspections).
BEST PRACTICE **Permit Inspection**	An effective source control program conducts a comprehensive site visit/inspection before issuing a new industrial discharge permit (see Best Practices for Inspection—Definition: Major Inspection).
BEST PRACTICE **Format and Language**	An effective source control program issues permits with formatting and language that is clear and understandable by the Industrial User (IU). Information mapping (the format of this document) is one way to improve communication of complex information.
BEST PRACTICE **Staggered Renewal Dates**	An efficient source control program staggers permit renewal dates so that excessive numbers of permits do not come due all at once.

Best Practices for Sampling

INTRODUCTION

Best practices for sampling were developed to apply to all types of organizational structure between source control program staff and laboratory staff. Some organizations utilize source control staff to perform sampling, while others obtain lab staff support under a different chain of command. In addition, some programs perform sampling and inspections concurrently utilizing the same staff, while others assign sampling and inspection to different staff to be performed at different times. For the most part, the sampling best practices apply to all variations in the way work is performed. In some cases, comments are included that address a specific organizational structure.

DEFINITION
Sampling

For purposes of benchmarking source control, sampling means

All resources and/or labor associated with:

- obtaining representative grab or composite samples to determine compliance with regulatory or permit standards;
- Collection of data for revenue purposes; and
- Collection of information for special studies or response to treatment plant upsets.

Types of sampling include:

- Industrial user (IU) sampling;
- Upstream/downstream maintenance hole sampling for investigations; and
- Periodic collection system sampling.

BEST PRACTICE
QA/QC Sampling Practices

An effective source control program includes written quality assurance and quality control (QA/QC) sampling practices with systematic checks to ensure that sample data collected are valid.

QA procedures include preparation of sample equipment, maintenance, and calibration. QC checks include trip blanks, field blanks, and field spikes to detect any contamination or cross contamination.

Chain of custody documents are used where required.

BEST PRACTICE
Sampling Preparation

An effective and efficient source control program includes preparation for sampling activities. An office file review of IU processes, permits, and pretreatment is performed prior to the sampling activity, and inspectors are prepared to answer any IU questions.

BEST PRACTICE **Sampling Concurrent with Inspections**	An effective source control program conducts a sampling inspection with every industrial user sampling event including documentation of operating hours, process flow, and production abnormalities, etc.
BEST PRACTICE **IU Notification of Sampling**	An effective source control program performs sampling without prenotifying the industrial user. This practice minimizes the IU's ability to control the outcome of sample results by modifying facility operations.
BEST PRACTICE **Field Observations and Field Measurement Procedures**	An effective source control program includes field observations and measurements as part of sampling activities. Parameters to be observed or measured may include flow, pH, ORP, conductivity, temperature, qualitative measures of heavy metals, appearance of oil and grease, etc.
BEST PRACTICE **Sampling Frequency**	An effective and efficient source control program reduces risk to its system by focusing additional **sampling,** on those dischargers which pose the greatest risk to the Publicly Owned Treatment Works (POTW). Large-volume dischargers, potential dischargers of highly toxic wastes, or dischargers with a poor compliance history are sampled more frequently than smaller companies posing less risk to the POTW. At a **minimum, an** effective source control program samples its SIUs at the frequency established in 40 CFR 403) or the frequency required by the NPDES permit issued to the POTW, whichever is **greater.**
BEST PRACTICE **Providing Data to IUs**	An effective source control program provides POTW sampling results to an IU as a feedback mechanism for the IU's compliance status.
BEST PRACTICE **Split Sampling**	An effective source control program has a policy on split or co-collected samples and provides split or co-collected samples to IUs at their request. Results are averaged before determining compliance, provided that proper QA/QC procedures are used (i.e., sample preservation, chain of custody, etc.) for both samples.
BEST PRACTICE **Sample Archives**	An effective source control program retains samples in archives for future reference until all compliance issues have been resolved or sample life has been exceeded, whichever comes first.

BEST PRACTICE **Sample Documentation**	An effective and efficient source control program documents all sampling events (including operating hours, process flow, and any production abnormalities, etc.) in a timely and uniform manner. All observations should be documented in field notebooks or other appropriate forms.
BEST PRACTICE **IU Sampling During Swing and Graveyard Shifts**	An effective source control program includes after-hour and weekend compliance sampling and concurrent sampling inspections. Staffing is provided based on the operating practices of IUs in the inventory and the determination of whether or not day-shift sampling is representative of after-hours IU operations. Consideration is given to revising daytime shift schedules of sampling staff to night or swing shift sampling as a means of minimizing costs. Work schedules between Pretreatment and Lab sections are coordinated to ensure staff availability and access to lab facilities during non-standard hours.
BEST PRACTICE **Proportionate Sampling**	An effective source control program takes composite samples only during a company's hours of operation (stated or suspected) rather than routinely doing 24-hour composites.
BEST PRACTICE **IU Self-Monitoring**	An effective and efficient source control program requires IU self-monitoring to promote the concept of IUs taking responsibility for their own wastewater quality. Both POTW and IU self-monitoring data are used to verify compliance.
BEST PRACTICE **Sample Crew Size**	An efficient source control program keeps sample crew size to a minimum while still maintaining quality work and addressing safety considerations. A larger crew size may be necessary to address safety issues such as night sampling, system sampling in maintenance in streets, or when heavy lifting is required for any reason.
BEST PRACTICE **Surveillance Sampling**	An effective source control program performs clandestine street surveillance sampling to respond to tips or suspicions that IUs may be discharging illegally.
BEST PRACTICE **Treatment Plant Response Plan**	An effective source control program develops a response plan for investigating treatment plant upsets. This plan includes procedures for street sampling and investigation upstream of the treatment plants.