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LEAN CASE STUDIES: CONTINUOUS IMPROVEMENT IN STATE AGENCIES

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INTRODUCTION

State environmental leaders are successfully leveraging Lean approaches to improve the quality of the services they deliver to a wide range of customers. Maximizing cost efficiencies and minimizing budget cuts and employee lay-offs are paramount for today's public sector official. For agencies feeling the pinch of declining resources in today's economy, consider giving continuous improvement tools a second look.

Lean is a process improvement approach and set of methods that seek to eliminate non-value added activities or waste. Kaizen and Value Stream Mapping (VSM) events are key to Lean's effectiveness in making rapid, breakthrough improvements while creating an employee-empowered continual improvement culture. In Japanese, *kai* means "to take apart," and *zen* means "to make good."

For the past few years, state governmental agencies with primacy over the administration of environmental programs have begun to significantly improve permitting and administrative processes using Kaizen, VSM, and Six Sigma. Lean events have cut lead times for air and water permit reviews, reduced the complexity and redundancy of administrative tasks and procedures, and improved the quality of state agency reporting, products, and services. The Lean process improves relationships among and between states and stakeholders, U.S. EPA regions, and EPA headquarters. Most importantly, Lean helps states to more efficiently and effectively reach their environmental protection goals.

This report is a compilation of 23 case studies provided by states and the EPA. The studies document the successes that states—and at least one region—have achieved utilizing lean process improvement techniques. The description of the state Lean events include specific examples of the types of changes

that environmental—and other—agencies have made as part of their efforts to cut costs, improve delivery of services, and streamline programs.

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Connecticut - Evaluation of the Air Planning and Standards Division Permit Modeling Program

State Agency: Connecticut Department of Environmental Protection (DEP), Bureau of Air Management (BAM), Planning and Standards Division (PSD)

Method Implemented: Kaizen Event

Summary: The current Division's regulatory air modeling process is impacting the timely issuance of new source review (NSR) air permits. The process under review starts with a pre-permit application meeting through approval of a dispersion modeling analysis performed in support of a permit application.

Scope of the Kaizen Project

Specific Process Involved: Evaluation of the Air Planning and Standards Division Permit Modeling Program.

Goals and Objectives:

- Conduct Value Stream mapping of all steps that affect the modeling process.
- Eliminate wastes and/or non-value added steps found in process.
- Identify ways to improve the process to free up internal staff resources and to contribute to a reduction in elapsed time between a pre-application meeting and final permit approval.
- Establish baseline measures for the Division's permit modeling process and track improvements over time.
- Reduce processing time by one-third.
- Develop project plan to implement changes.
- Develop time measurement system for tracking and reporting projects.
- Update guidance and databases to improve communication flow and make process more visible to stakeholders.
- Increase efficiencies in disseminating inventory data.

Year Conducted: June 2008

Consultant Support: Leanovations, LLC

Process Changes and Results

As a result of this event, the Planning and Standards Division made a number of process changes, including the following:

- Based on our Value Stream Mapping, achieved a 43percent reduction in the number of total steps in the process.
- Rewrote of modeling guidance.
- Implemented new business rules.
- Made key information accessible via DEP website.
- Created and maintain visual boards.

The project yielded the following results:

- Trend indicates reduction in processing time; major improvement goals for the process are still in development.
- Project Plan completed and, to date, 20 tasks out of 38 were completed.
- Development of a time measurement system for tracking and reporting projects was completed, and Key Performance Indicators (KPI) now are tracked.
- In progress/updated guidance and databases. Enhanced and improved Web access; created status mapping boards visible to the public; developed new business rules to facilitate process; developing new guidance document for web posting (currently editing draft document); developing databases which stakeholders can use to facilitate a modeling review (hit a national snag in the quality of data available; expecting resolution from EPA 1st quarter 2009).
- Completed short-term improvement in the dissemination of inventory data by eliminating F.O.I.A. request. Require electronic request of data for speed and tracking purposes. Currently working on e-government inventory access (EMIT On-Line).

Post-Kaizen desired state resulted in improved program efficiencies:

- Eliminating administrative wait time has cut the time required to process an inventory request.
- Document transfer time has been reduced to a minimum by the elimination of some supervisory sign-offs and electronic transfer of all documents.
- A significant time step of approximately 10 days for delivery of ambient monitoring data has been eliminated by making this data available to stakeholders on the agency website.

Highlights of the Implementation Project Plan included:

Two-month goals:

1. *Meet with Northeast regional modeling contacts:* At a meeting of the Northeast states modeling contacts, states coordinated to develop common databases, and guidance was discussed; cooperation from other states on modeling guidance expected, but initial database effort will be minimal due to lack of resources and funds for such an effort.
2. *Amended permit application instructions:* Expedite review process by requiring submission of two paper copies and one electronic copy of the application, eliminate supervisory sign-off on modeling transmittal memo, and send memo electronically.
3. *Eliminate F.O.I.A. request for routine inventory search:* Stakeholder can contact appropriate staff directly via e-mail.
4. *File all documents in to SIMS (Site Information Management System):* Drafted and finalized protocol for entering documents into SIMS.
5. *Prepared spreadsheets of measured design concentrations for all criteria pollutants:* Posted this data on the web and developed maps of this data to post on the web.
6. *Prepare spreadsheet of PM_{2.5} 24-hour measured data:* These text files were developed and placed on the website so that stakeholders have direct access to the data at all times; this will save information transfer time.
7. *Develop work plan for uploading inventory data on web:* This is a long term (one year) plan to give stakeholders direct read-only access to routine inventory emissions and stack parameter information.
8. *Develop modeling project spreadsheet and post a visual for the public:* Informs stakeholders about the status of projects at a glance.

Status: Completed - 1, 2, 3, 4, 5, 6, and 8; Ongoing - 7

Six-month goals:

1. *Develop first draft of revised modeling guidance document:* Review current guidance from other states, identify best guidance as a template, write first draft document.
2. *Prepare meteorological data sets for posting on web:* Develop pre-processed meteorological data sets that stakeholders can use in their regulatory modeling.
3. *Quality-assure inventory data for web posting:* QA data to limit need for agency interaction w/stakeholders, this task has not been started.

Status: Completed – 1; Ongoing - 2; Not started - 3

Twelve month goals:

1. *Upload completed meteorological data sets to web page:* Met. Database development is ongoing; some snags have been identified, but one-year completion deadline should be met.
2. *Provide stakeholders opportunity to weigh in on draft revised modeling guidance (March 2009):* To maintain an open process and obtain valuable input from stakeholders.
3. *Finalize revised modeling guidance and post on web page:* Promote consistency, make modeling process as transparent as possible, and avoid mistakes and misunderstandings that lead to frequent rework by stakeholder and re-review by agency.
4. *Post inventory data on web page:* On going through the EMIT On-Line effort.

Status: Ongoing and On Schedule: 1, 2, and 3 on schedule; Ongoing and not on schedule: 4

Additional Comments

Development of KPI chart documented baseline time steps in the modeling process and brought into focus a current timeline of the process and a clear need to implement and even improve the draft project plan. Critical in the process is having management support in accepting recommendations for change and being fully engaged in implementation. Work done by this team has been shared with the eight NESCAUM states; they have been interested in our progress, and we have been updating them on our NESCAUM Modeling Committee quarterly conference calls. A thoroughly detailed and honest Value Stream Mapping of the process is the foundation for everything that follows.

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**Connecticut - Office of Long Island Sound Structures, Dredging, and Fill Permit
Application Review Process**

State Agency: Connecticut Department of Environmental Protection (DEP), Bureau of Water Protection and Land Reuse, Office of Long Island Sound

Method Implemented: Kaizen Event

Summary: Waste in the Division's Structures, Dredging, and Fill (SDF) permit application review process creates extended processing times and inefficiencies, preventing staff from undertaking new initiatives in permitting, compliance, and enforcement. The specific process is the review of full permit applications from receipt to issuance of the permit document.

Scope of the Kaizen Project

Specific Process Involved: Structures, Dredging, and Fill Permit Application Review Process

Goals and Objectives:

- Identify waste within the permit application review process including the initial completeness review, consistency determination, site inspections, general processing, and internal review, approval, and sign-off steps.
- Develop a value stream map of the permitting process, document process steps, and develop written Standard Operating Procedures.
- Reduce average processing time by minimizing the number of steps in the process.
- Reduce average processing time of initial response letter ("fee letter").
- Reduce average processing time from application receipt to permit decision.
- Reduce the pending permit application backlog by 50 percent.

Year Conducted: June 2008

Consultant Support: Leanovations, LLC

Process Changes and Results

As a result of this event, the Office of Long Island Sound made a number of changes to the application review process, including the following:

- Eliminated steps in the permit review process, which were not value-added.
- Eliminated the time-consuming back and forth between the analyst and the applicant/engineer.
- Instituted a new permit review process whereby the applicant is required to coordinate with state and local entities prior to application submission in order to identify potential concerns and obtain recommendations.
- Strongly encouraged pre-application meetings between applicants/engineers and staff to assure the submission of a complete application that is consistent with statutory standards.
- Standardized forms and permit documents.
- Substantially reduced certified and general mailings that were not required by statute to reduce costs.
- Began the use of new permit process documents and mail procedures prior to the complete implementation of Lean to glean the early benefits from the Lean process.

The project yielded the following results:

- Completed the value stream map and development of written Standard Operating Procedures.
- Reduced average process review steps from 132 steps (June 2008) to 76 steps (January 2009) (42percent reduction).
- Reduced average processing time of initial response letter from 205 days (June 2008) to 23 days (January 2009) (89 percent reduction) (one application; proposed was 30 days).

- Reduced average processing time from application receipt to permit decision from 566 days (June 2008) to 52 days (January 2009) (90 percent reduction) (one application; proposed was 131 days).
- Reduced application backlog from 269 (June 2008) to 262 (January 2009) (3percent reduction).

Post-Kaizen desired state resulted in improved program efficiencies:

- Pre-application consultation with local officials and resource experts eliminates nearly all waiting for review/response during application review and allows applicants to revise application before even submitting to DEP.
- Requirement for surveys to be submitted with all application drawings so that DEP may rely upon drawings with greater certainty of site conditions.
- Revised mailing list to provide significant time and cost savings for DEP.
- New Pre-Application Questionnaire allows DEP to identify concerns early in the process.

Highlights of the Implementation Project Plan included:

Two month goals:

1. Revise protocol for clerical staff assignment of applications by town-assignments.
2. Complete hard copy of future state map.
3. Create central location for all new permit template documents.
4. Create new consultation forms and instructions.
5. Develop new notice of insufficiency and other correspondence.
6. Develop new summary sheets (completed for all goals).

Six-month goals:

1. Create new application form and instructions.
2. Train permit staff on new review procedures.
3. Conduct outreach and training for regulated community and consultants.
4. Conduct outreach and training for local officials and resource experts.
5. Develop protocol for analyst recommendation meeting.
6. Develop permit process.
7. Upload new forms to Internet.
8. Request delegation of authority to Bureau Chief for signature.
9. Train clerical staff on new PN procedure.
10. Develop Frequently Asked Questions document; implement new procedure (November 1, 2008) (completed and/or ongoing for all goals).

Twelve month goals:

1. Seek statutory/regulatory change for application fees.
2. Develop process for expiration notices.
3. Conduct customer survey (Status Update: June 30, 2009).

Additional Comments

The transition period allowed direct attention to be paid to backlogged applications. The regulated community embraced change and suggested additional improvements and innovations. CT DEP hopes to expand process improvements to other application types in near future. The post-Kaizen regular meetings are critical to ensuring that forward momentum continues. We recognize that Key Performance Indicators may not show immediate results, especially when a full application process is the focus of Kaizen improvement.

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Connecticut - Evaluation of the Water Permitting and Enforcement Division's Enforcement Program

State Agency: Connecticut Department of Environmental Protection (DEP), Bureau of Materials Management & Compliance Assurance (MMCA), Water Permitting and Enforcement Division (WPED)

Method Implemented: Kaizen Event

Summary: The Division's Enforcement programs do not consistently meet the Department's Enforcement Response Policy (ERP) timeframes. The Division includes three separate enforcement programs – Storm Water Permitting and Enforcement; Industrial Enforcement; and Field Compliance and Enforcement. Each of the program's administrative enforcement processes needs to be evaluated and standardized to improve overall enforcement program timeliness. The work processes under review are from the point of an issuance of an NOV, through to its subsequent next steps – either to closure or to an elevated enforcement action (i.e., draft Consent Order).

Scope of the Kaizen Project

Specific Process Involved: Evaluation of the Water Permitting and Enforcement Division's Enforcement Program.

Goals and Objectives:

- Conduct value stream mapping on the three programs.
- Eliminate wastes and/or non-value added steps found in the administrative enforcement activities.
- Identify ways to improve administrative enforcement processes so as to meet the Agency's Enforcement Response Policy (ERP) timeframes.
- Establish baseline measures for the Division's enforcement processes.
- Reduce Notice of Violations (NOV) response review time by 50percent (60 days to 30 days).
- Reduce enforcement elevation decision time by 30percent (60 days to 42 days).
- Reduce the time for drafting formal enforcement document by 30percent (Actual time to draft - 387 days; ERP timeframe - 180 days; Pre- Kaizen goal - 120 days).
- Reduce the timeframes regarding review process for: staff (45 day goal), supervisors (15 day goal) and managers (15 day goal).
- Reduce NOV backlog: 6 month goal = 50 percent (291) and 12 month goal = 75 percent (387).
-Revised 6 month goal (596): Status as of January = 549 (46 percent).

-Revised 12 month goal (894): *June 2009*.

Year Conducted: June 2008

Consultant Support: Leanovations, LLC

Process Changes and Results

As a result of this event, the Water Permitting and Enforcement Division made a number of changes to the process, including the following:

- Based on our Value Stream Mapping, achieved a 68 percent reduction in the number of total steps in the process. Eliminated all no value steps in the review process.
- Standardized forms and permit documents; utilized electronic transmittals among staff for review of draft documents.
- Developed Standard Operating Procedures for standard administrative work practices for enforcement program staff.
- Eliminated pre-agenda meetings.
- Established Key Performance Indicators (revised), tracked KPIs and shared with all enforcement staff.
- Created electronic buck-slip for sign-off of documents.
- Created Status boards and visual file management process.
- Changed NOV review process.

The project yielded the following results:

- Trends indicate a reduction in the NOV response review time. Currently (1/09), average is 13.2 days, resulting in a 75 percent reduction.
- Reduced enforcement elevation decision time to 7 days, resulting in an 88percent reduction.
- Reduced the time for drafting a formal enforcement document; trends (1/09) indicate a reduction: currently, average is 104 days, resulting in a 73 percent reduction.
- Reduced the timeframes regarding review time by staff:
 - Staff review time: currently (1/09), average is 46 days (needs work).
 - Supervisors review time: currently (1/09), average is 12 days.
 - Managers review time: currently (1/09), average is 12 days.
- Reduced NOV backlog:
 - Revised 6 month goal (596): Status as of January = 549 (46percent)
 - Revised 12 month goal (894): *June 2009*

Post-Kaizen desired state resulted in improved program efficiencies:

- The time to draft a final Consent Order currently (1/09) averages 112 days. The Agency's Enforcement Response Policy sets a deadline of 180 days.
- An important value-added step new to the process is the bifurcation of management lead decision-making on enforcement cases.
- Established Weekly Status Meetings that have facilitated information sharing, discussion/debate and decision-making on cases resulting in timely resolution of cases, and consistency among the three enforcement program administrative approaches.

Highlights of the Implementation Project Plan included:

Two-month goals:

1. Centralized Division's Enforcement File Management: colored folders, e-mail pop-ups, revised buck-slips that include timeframes for sign-offs; created a process for automatically generating closure letters and created new process for notice to responsible parties to improve compliance with response requirements.
2. Created status boards.
3. Changed the NOV review process. Initiated and conducted weekly status meetings.
4. Defined manager's expectations of enforcement actions and defined managerial responsibility for decision making.
5. Assigned Field Staff to Office to reduce NOV backlog.
6. Implemented work review process using electronic drafts.
7. Training provided to staff on Access and Excel (database management) and training on project management.

Status: *Completed for all two-month goals.*

Six month goals:

1. "Standard Operating Procedure for Administrative Enforcement Processes" drafted and made effective 01/14/09. This SOP establishes protocols for the enforcement process including case preparation, document flow, case coordination, and supervisory review. This SOP covers the period from completion of the inspection report through to the issuance of NOVs and completion of the first draft of formal enforcement action.
2. Standardize NOV, CO language and penalty calculations for General Permits: Standard Work Formats being created for Vehicle Maintenance General Permit (drafted); Storm Water Industrial General permit (final draft); Tumbling and Cleaning General Permit (draft by June 30, 2009).
3. Implemented First-In/First-Out for the review and sign-off of enforcement actions at the managerial level.

Status: *Completed and/or ongoing for all six-month goals.*

Twelve month goals:

1. Developing a draft format for Field Consent Order (ticket/enforcement) for General permit violations.
2. Standardize penalty for more categories.
3. Streamline databases.
4. Developing a draft format for standard language for CO per individual permits and general permits.

Status: *Update June 30, 2009*

Additional Comments

Critical in the process is having management support in accepting recommendations for change and being fully engaged in implementation. Important to keep all Division staff informed as to the project's goals and implementation activities. Buy-in from staff is critical to make the process work. As the project implementation moves forward, need to be mindful of including others within the programs to integrate efforts moving forward. Acknowledge the work of the Team and Team Leader. There are competing demands on implementing Lean and on going work of the enforcement day-to-day program demands. Need to balance early on the KPIs and the goals set during the Pre-Kaizen planning phase.

During the Kaizen event it is important to include Information Technology expertise to identify opportunities for program efficiencies using the various databases and computer capabilities. Always use Plan-Do-Check-Act (P-D-C-A) as project plan is being implemented. Critical to the successful implementation of the project plan is the administrative support. Work done by this team has been shared with other Agency enforcement programs.

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Delaware – Minor Source Air Construction Permitting

State Agency: Delaware Department of Natural Resources and Environmental Control (DNREC)

Method Implemented: Value Stream Mapping (VSM)

Summary: The Delaware Department of Natural Resources and Environmental Control (DNREC) first used Value Stream Mapping (VSM) in July 2005 to identify ways to make air construction permitting processes more efficient. Michigan's success using VSM to improve a similar air permitting process served as a model for Delaware's initiative. The Department's "Future state" VSM workshop goals focused on improving permit processing times by significantly reducing rework and waiting periods and increasing early communication with the permit applicant. The Delaware Economic Development Office, General Motors, and other industry representatives provided technical assistance and guidance during all phases of the VSM process improvement initiative. Success stemming from the air construction permitting VSM workshop has led Delaware DNREC to expand its process improvement initiative—the Department is currently in the planning stages for five additional VSM projects.

Scope of the VSM Project

Specific Process Involved: Workshop on minor source air construction permitting

Goals and Objectives: The Delaware Economic Development Office, in conjunction with local industry representatives familiar with Michigan's success using VSM, recommended that Delaware DNREC apply VSM tools to increase efficiency in their permitting processes. Industry representatives, primarily from the automotive and applied chemistry sectors, were part of the project team and participated in the VSM workshop, permit redesign, and subsequent monthly project review meetings.

Year Conducted: 2005

Consultants Support: The Delaware Economic Development Office provided funding for a facilitator from the Delaware Manufacturing Extension Partnership to facilitate the workshop and provide on-going assistance to the DNREC.

Process Changes and Results

The Delaware DNREC Air Division has implemented a number of process changes as a result of the air construction permitting VSM workshop, including:

- Developing new permit applications.
- Installing visual permit tracking boards.
- Implementing a “First In, First Out” permitting system.
- Initiating pre-submittal application meetings.
- Implementing administrative and technical completeness gates.

As a result of these process changes, Delaware DNREC Air Division has seen:

- Backlog reduced from 199 to 59 natural minor permits in three months and to 25 in one year.
- Natural minor air construction permits issued within 76 days of application submittal.
- Delaware DNREC staff time allocated more effectively to “mission critical” work.
- Rework reduced by 45 percent.
- Devotion of ½ FTE employees devoted to VSM efforts during project planning and implementation stages.
- Improved communication with industry applicants.
- A process improvement culture integrated into the Division.
- Staff gained ownership of the process, empowering them to identify and address improvement opportunities.

Additional Comments

- Delaware DNREC continues to implement VSM-identified goals for the minor source air construction permitting process.
- Delaware DNREC initiated the following three VSM workshops in September 2006: Brownfields, underground storage tanks, and synthetic minor air construction permitting.
- The Department is also scoping two additional projects (wetlands permitting and storm water Permitting) for process improvement using VSM tools.

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Florida – Northeast District Wastewater Inspection Follow-Up

State Agency: Florida Department of Environmental Protection, Northeast District Regulatory Office

Method Implemented: Kaizen event

Summary: The Wastewater Section ensures that all facilities—domestic wastewater and industrial wastewater facilities—meet State of Florida water quality standards to protect the environment and public health. The Wastewater Compliance Section in Northeast Florida oversees more than 365 regulated domestic wastewater treatment facilities, most of which are privately owned, in addition to many industrial facilities, including pulp and paper mills, phosphate and heavy mineral mines, bulk oil terminals, and many agricultural processing activities.

The Section conducts more than 1,000 inspections each year to ensure that the wastewater discharged from these facilities is in compliance with state rules and regulations. Following each inspection, an inspector provides detailed inspection results to each facility. The Department uses an Oracle-based database to track compliance. Each response to an inspection report must be “closed out” within that system. Prior to the Kaizen event, there was no standard in place to update the database and the documentation of case closures lacked consistency within the database.

The team mapped the existing process and then developed specific actions to reduce the instances of cases reported as “open.” After the Kaizen event, the number of cases in the database reported as open for over 60 days dropped by 99.5 percent—from 708 to 3. A newly developed automated reminder sent to each inspector with pending cases now ensures timely data entry and standards have improved the consistency of the database entries. Just as important, the new process has facilitated closer communication between Florida DEP-NE and regulated facilities.

Scope of the Kaizen Project

Specific Process Involved: Wastewater Compliance Follow-up Activity Documentation

Goals and Objectives: Develop a standard process to improve consistency of case management in the Oracle database such that the number of “open” cases greater than 60 days decreases by 75 percent.

Year Conducted: 2007

Consultant Support: Self-facilitated

Process Changes and Results

The Northeast District Wastewater Compliance team mapped its process and developed actions to reduce the instances of cases recorded as “open” in the Oracle Database. Standard operating procedures improved consistency and benchmarks provided goals for the team.

The new process allows for open and transparent tracking of case closure. Automated reminders trigger regular updates resulting in better data management and closer communication with regulated

facilities. As a product of these efforts, the numbers of cases open greater than 60 days dropped by 99.5 percent—from 708 to 3.

The Wastewater Compliance Section's effort was exceptional for its innovation and creativity because the group made significant gains in a data entry process and made the long-term sustainment of this project fun. In an effort to sustain the gains realized in the months following the process-mapping event, the group created an automated reminder to trigger inspectors to update the database. Once per month a "tickler" report is run and the group uses a light hearted "Tickle-Me-E.L.M.O" event to spice up the reporting. The Sesame Street character, Elmo, is used as an event mascot, and a doll is placed in a common area to remind staff of the monthly updates. The Program Administrator showed support at the kick-off event by bringing an Elmo themed party with cake and ice cream to kick off the effort—proving that process improvement can be both beneficial and fun for everyone involved.

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Florida – Northeast District SLERP Enforcement Documentation Improvement

State Agency: Florida Department of Environmental Protection, Northeast District Regulatory Office

Method Implemented: Kaizen event

Summary: The Submerged Lands and Environmental Resource Permitting (SLERP) compliance and enforcement staff process to bring environmental violators of wetland rules into compliance through enforcement actions was inconsistent and involved multiple redundant steps. The compliance and enforcement team mapped its process to identify and eliminate non-value added steps used to develop enforcement documents. Removing 46 percent of the steps in the process drastically decreases the amount of time spent editing and revising drafts and allows staff to close cases more quickly (saving an estimated 34 hours per case). In addition, staff now is better able to locate enforcement cases in the process and can respond faster and more reliably to public inquiries.

Scope of the Kaizen Project

Specific Process Involved: Standardized the Enforcement Document Development Process

Goals and Objectives: Create a standard process to develop SLERP enforcement documents resulting in a consistent approach that reduces the time needed to execute enforcement documents.

Year Conducted: 2007

Consultant Support: Self-facilitated

Process Changes and Results

During the event, the team took the following actions:

- Created the Environmental Review Checklist (ERC) to eliminate redundant reviews. The checklist is used when initially documenting a violation to determine what type of enforcement documentation is needed. This creates a roadmap for the project manager and eliminates the need for management oversight at each step.
- Created and documented a standard process that improved efficiency and accountability.
- Improved communication by outlining and documenting responsibilities.
- Improve tracking and record keeping during the decision making process.
- Identified training needs.
- Decreased number of steps from 45 to 25.
- Eliminated three unneeded memos.
- Eliminated ten approvals from the process.

The removal of 46 percent of the steps in the process drastically decreased the time spent in editing and revising drafts. Cases are closed much faster, saving an estimated 34 hours per case. Additionally, staff can more easily locate enforcement cases; provide reliable responses to public inquiries, and resolve enforcement cases in a timely manner.

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Florida – Northeast District Sanitary Sewer Spill Response Improvement Event

State Agency: Florida Department of Environmental Protection, Northeast District Regulatory Office

Method Implemented: Kaizen/Value Stream Mapping (VSM)

Summary: The Wastewater Section monitors hundreds of wastewater facilities and must respond to abnormal events in a timely manner. Such events include spills into fresh water, which must be quickly sampled and monitored. There is no standard procedure or set area for equipment.

This team standardized the spill response process to guarantee a quicker response time and better protect the environment and public health. The items put in place following the value stream mapping of the process include a public outreach plan, standardized response procedure, facility checklist, and dedicated call number. The process is estimated to be saving the state and public/private utilities thousands of dollars a year and more than 25 days of response time per year.

Scope of the Kaizen-VSM Project

Specific Process Involved: Sanitary Sewer Spill Response

Goals and Objectives: The team wanted to standardize the process, have a set location for needed equipment, and reduce response time by 50 percent.

Year Conducted: 2008

Consultant Support: Self-facilitated with the assistance of the Jacksonville Lean Consortium

Process Changes and Results

The potential danger of sanitary sewer spills necessitates a quick response time to ensure environmental protection and the safety of the public living and working in the vicinity. Event participants mapped their process and optimized response time to spills, thereby reducing the number of steps to respond from 24 to 11 and decreasing response time by 43 percent from 250 to 169 minutes. The team also standardized coordination with individuals responsible for the cleanup to protect public health.

Prior to the event, one or two people were responsible for responding to sewage spills. As a result of the event, the team created an “on-call” program wherein team members share the responsibility. Individuals in the responders group have the necessary experience and expertise to respond to any situation. This provides the Department with additional capacity to react to any event regardless of staffing.

The improved process allows department responders to arrive at a spill with new a standardized spill response checklist for the facility that outlines the necessary action needed to secure the area following the spill and ensures that facilities are aware of their responsibilities. Facilities now complete a new, convenient self-addressed form that need only to be folded and mailed to the Florida DEP.

Another outcome of the event was the creation of a response kit that allows sampling within required time frames. Reducing the amount of time it takes to respond to an event is important in determining the environmental impact and the necessary actions needed to resolve identified problems.

More Information

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Four States/EPA —National Pollutant Discharge Elimination System (NPDES)

Agencies: Iowa Department of Natural Resources
Kansas Department of Health and the Environment
Missouri Department of Natural Resources
Nebraska Department of Environmental Quality
EPA Region 7
U.S. EPA Headquarters, Office of Wastewater Management (OWM), Office of Civil Enforcement (OCE), Office of Compliance (OC), and Water Permits Division

Method Implemented: Kaizen event (five-day event)

Summary: Implementation of the permitting and enforcement processes of the National Pollutant Discharge Elimination System (NPDES) program was the subject of a Kaizen event in August 2008. The objective of the week-long event was to improve the effectiveness and efficiency with which all parties implement the NPDES program, and to learn how best to work together and resolve issues quickly. It included discussions on the permitting process, related technical issues, and enforcement activities, including formats for planning and conducting inspections. The event resulted in redesigned processes that clarified how to better address critical technical issues, plan and conduct inspections, and collaborate between the agencies.

Scope of the Lean Kaizen Project

Specific Process Involved: This event examined the implementation process for the EPA Region 7 NPDES program from the time the States and Region negotiate and agree on performance criteria and measures to when EPA completes a performance report.

Goals and Objectives: The goal of the Kaizen event was to design a process to better implement the NPDES program where:

- Program review and follow-up processes are unified and clearly defined;
- 100 percent of state wastewater programs exceed the minimum level of performance established by EPA in the annual planning process;
- Zero permits merit objection or significant comments from EPA;
- 100 percent of priority permits are completed, with excellence as a goal, not perfection; and
- 100 percent compliance for Significant Non Compliance (SNC) is achieved.

Year Conducted: 2008

Consultant Support: TBM Consulting Group

Process Changes and Results

Goals and objectives for the event were set during a pre-event meeting. Participants subsequently were

assigned homework that described their portion of the process. This information was shared with all parties prior to, and provided the foundation for, the main Kaizen event. During the event, participants developed “current state” and “future state” maps of the processes. New processes were designed for three aspects of the implementation process: annual strategic planning, resolution of technical issues, and EPA oversight. Key process changes are identified below.

- **Annual Planning.** During the planning process, performance criteria and measures for evaluating state wastewater enforcement programs are established. Under the new design, process steps were added as participants decided good planning and communication up-front would help to create performance criteria and measures that better reflect state and EPA priorities and save time in the long run.
- **Resolution of Technical Issues.** In the old process, there were tough technical issues that delayed permits. In the new process, technical issues are identified before a permit comes in, and the right people are brought in to deal with them before the permit application is submitted.
- **Oversight.** Oversight refers to EPA performance reviews of state wastewater programs. Previously the permit and enforcement reviews were conducted separately. This led to communication gaps surrounding the reviews. The new process will coordinate permit and enforcement reviews and eliminate non-value added process steps.

The Kaizen event yielded a process design which will result in:

- An 82 percent decrease in processing time to resolve technical issues that delay permits (from 5.5 months to 1 month).
- A 67 percent decrease in total number of steps for EPA to review a state NPDES program (from 39 steps to 13 steps).
- A 75-68 percent decrease in processing time for EPA to review a state NPDES program (from 4-19 months to 1-6 months).
- Increased collaboration between EPA and states to improve planning and other aspects of program implementation.

Participants also developed implementation plans for the three new processes. Key implementation actions included:

- Prepare earlier and have broader stakeholder participation in the yearly planning and follow-up meetings.
- Have active participation by EPA in stakeholder meetings when states request it.
- Reduce data reporting requirements for state programs.
- Automate data reporting by facilities.
- Conduct a training needs assessment and develop a training implementation plan.
- Create a checklist for permit development and review.
- Hold workshops on important NPDES issues.

Since the Kaizen event, participants have been working on implementation.

- A follow-up meeting took place in December 2008 and another one is scheduled for June 2009.
- A workshop addressing NPDES and wet weather issues was held in March 2009.
- Iowa and Nebraska plan to conduct smaller spin-off events on the NPDES permit writing process.

Region 7 is sharing the results of the event and considering whether some of the outcomes may be applied nationally to the NPDES program.

More Information

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Four States/EPA Water Quality Standards Submission, Review, and Approval Process

Agencies: Iowa Department of Natural Resources
Kansas Department of Health and the Environment
Missouri Department of Natural Resources
Nebraska Department of Environmental Quality
EPA Region 7, Water Quality Standards Program and Office of Regional Counsel
EPA Headquarters, Office of Science & Technology, and Office of General Counsel

Method Implemented: Kaizen

Summary: The submittal, review and approval process of the EPA–state process for developing and revising Water Quality Standards (WQS) was the focus of a Lean business process improvement Kaizen event in June 2007. The participants included EPA Headquarters, EPA Region 7, and the state programs in EPA Region 7 (Iowa, Kansas, Missouri, and Nebraska). Water quality standards define allowable uses for water bodies and identify specific water quality criteria to achieve those uses within state or tribal lands. EPA must approve the water quality standards developed by a state before the standards go into effect. EPA regional offices, in this case Region 7, assist states and Tribes in the development of water quality standards programs that meet the Clean Water Act’s goals of restoring and maintaining the chemical, physical and biological integrity of the nation’s waters.

The objective of the weeklong event was to improve communication and understanding between states, EPA Region 7 and EPA Headquarters on the process to develop and revise water quality standards. Prior to the Kaizen event, the water quality standards submittal, review and approval process was time-consuming, unpredictable, and frustrating for all parties. The event resulted in a redesigned process.

Scope of the Lean Kaizen Project

Specific Process Involved: Water Quality Standards Submittal, Review, and Approval Process, from the time the States recognize that the WQ standards need to be updated until EPA has approved the new standards.

Goals and Objectives:

- Achieve 100 percent technically and legally defensible approvals on time.

- Engage EPA early in the state water quality standards development process when the state has the most flexibility to make changes.
- Establish and improve the partnership and trust between EPA and the Region 7 states.
- Determine when and how to communicate with stakeholders and the public to facilitate the process and understand the impact on the public.
- Clarify and improve the water quality standards process and everyone's roles for working together.
- Enable states to address new EPA water quality standards recommendations within two triennial reviews.
- Enable states to stay current with their triennial reviews.

Year Conducted: 2007

Consultant Support: TBM Consulting Group

Process Changes and Results

During the event, participants designed a new process for submitting, reviewing, and approving water quality standards. Key process changes include:

- Development of an understanding of each agency's processes and an appreciation for the motivation and restrictions of these processes.
- Identification of strategic points where EPA's involvement in the states' water quality standards rulemaking process is most critical and effective.
- Coordination of state and EPA efforts as soon as a state starts to consider new water quality standards or changes to existing standards in order to streamline the submittal, review, and approval process.

The event yielded the following results:

- 51 percent reduction in number of steps in EPA's approval process (from 53 to 26), yielding significant time savings for all agencies.
- Clearer understanding among EPA Headquarters, the Region, and the states of each other's processes.
- Identification of strategic points, early in the process, where EPA involvement in state water quality standards rulemaking processes is most critical and effective.
- 48 percent reduction in process steps (from 50 to 26), cutting the length of the process from a few years to several months.
- 18 percent reduction of handoffs (from 17 to 14).
- 100 percent reduction in the number of loop-backs in the process (from 2 to 0).
- Increased collaboration between EPA and states to improve strategic planning.

Since the event, EPA Region 7 and States have implemented the following changes:

- State and EPA Region 7 have implemented the new process and staff members have been trained.
- States and Region 7 hold scoping meetings to discuss water quality standards science and feasible approaches.
- The process roles and expectations for states and EPA are clearer, and the workload is spread out instead of concentrated at the end of the process.

Since the Kaizen event, the four Region 7 states and EPA Region 7 have worked together early in the WQS process to agree on deadlines. Early editions of water quality standards packages are provided to

EPA by the states to ensure that the subsequent formal submissions will be reviewed and approved in a timely manner and expectations for agencies are clear. Participants continue to hold follow-up meetings to coordinate and continue to implement a common approach.

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Hawaii - Department of Health Environmental Response Process

State Agency: Hazard Evaluation & Emergency Response (HEER) Office, Hawaii Department of Health

Method Implemented: Kaizen event

Summary: This event focused on the incident response process from the time a potential concern is identified to completion of response. In addition, a more narrowed focus of the intent of the scope included the following:

- Empower staff to identify and act on high risk to human health and environment.
- Reduce administrative document responsibilities for technical staff.
- Increase visual controls.
- Ensure greater consistency in decision-making and staff workloads.
- Enhance communication with responsible parties to reduce backtracking and speed site response.

Scope of Lean Kaizen Project

Specific Process Involved: Address the incident response process from the time a potential concern is identified through completion of response.

Objectives:

- Narrowed the focus of the intent of the scope.
- Empower staff to identify and act on high risk to HH and environment.
- Reduce administrative document responsibilities for technical staff.
- Add visual controls.
- Ensure greater consistency in decision-making and staff workloads.
- Enhance communication with responsible parties to reduce backtracking and speed site response.

Goals:

Specific numbers or percentages:

- Reduce lead time by 50 percent
- 100 percent of high priority remediation sites are evaluated and assigned within ten days
- 100 percent of emergency response sites with high potential risk are coordinated with Hazard Evaluation and accepted by Site Discovery, Assessment, and Remediation (SDAR) within five days and the remainder within 30 days
- Delivery of incoming documents to relevant staff with 1 day

Year Conducted: 2008

Consultant Support: Guidon Performance Solutions

Process Change And Results

- Identified more than fifty areas where process could be more effectively implemented; subsequently narrowed to just over 20 actionable activity areas.
- Developed process step enhancements without decreasing overall program effectiveness.
- Implemented process activities that fostered more effective communication and handoff conditions between program sections.

Project to date yielded the following results:

- Provided for greater efficiencies in overall process by delegating approval authority to lower level of technical staff.
- Monitored progress to attain a 50 percent reduction in lead process time.
- 100 percent of emergency response sites with high potential risk have been coordinated with Hazard Evaluation and accepted by Site Discovery, Assessment, and Remediation (SDAR) within five days and the remainder within 30 days.
- Achieved one-day delivery of incoming documents to relevant staff.

More Information

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Iowa - Environmental Enforcement Process

State Agency: Iowa Department of Natural Resources, Environmental Services Division

Method Implemented: Kaizen event

Summary: Prior to 2005, the Iowa Department of Natural Resources (IDNR) struggled with its enforcement efforts. It lacked enforcement coordinators, enforcement priorities and performance standards in its environmental programs. Over one-third of its enforcement orders were appealed by the other party, which led to hundreds of administrative appeals. Additionally, IDNR had amassed more than \$1 million in overdue administrative penalties that were not collected.

To resolve these issues, the IDNR conducted a Kaizen event in 2005 to improve its environmental enforcement process. As a result of this Kaizen event, the DNR established a new enforcement program that was more productive and timelier than its predecessor. The new process focused on consensual or bilateral orders, which practically eliminated new enforcement appeals, and resulted in a substantial increase in penalties actually paid to the IDNR. Within the first year of implementing the new enforcement process, the average time an attorney worked on an enforcement case was reduced by 37 percent. Utilizing the services of the Iowa Department of Revenue, the IDNR collected more than \$200,000 in previously unpaid debt. To publicize its enforcement efforts, the IDNR now prepares an annual enforcement report highlighting its activities during the previous calendar year and places all its enforcement orders on its website. All these activities originated from the 2005 Kaizen event.

In 2008, this process was revisited to ensure that it was still operating effectively. This revisit only resulted in minor modifications, as the new process continues to function effectively.

Scope of the Lean Kaizen Project

Specific Process Involved: Evaluation of Environmental Enforcement Process

Goals and Objectives:

- Improve the perception of the enforcement process.
- Standardize the enforcement process.
- Prioritize cases referred to legal for enforcement.
- Develop a communication program between legal, the field offices, and the Attorney General's office.
- Create performance standards to ensure timely enforcement.

Year Conducted: 2005 and 2008 (three-year refresher event)

Consultant Support: TBM

Process Changes and Results

During this event, the IDNR made a number of changes to its environmental enforcement program, including the following:

- Enforcement priorities established for each program (e.g., asbestos removal in community schools and hospitals).
- The creation of an enforcement coordinator for each program. Cases from the statewide field offices are funneled to this individual to ensure that they meet the criteria for escalated enforcement and that consistent enforcement recommendations are made to legal staff.
- Creating a preference to use consensual or bilateral orders in the enforcement process. This may increase time up-front (e.g., settlement discussions), but significantly reduces appeals.

- Performance standards established (e.g., 90 days to prepare enforcement order following receipt of referral from field office).
- Using the debt collection expertise of the Iowa Department of Revenue to collect unpaid penalties.
- Written guidance to IDNR staff on the new environmental enforcement program. No written protocol existed previously.
- Create templates to be used by staff (e.g., referrals to legal, enforcement orders).
- Publicize enforcement efforts by using annual reports and the IDNR website.

The project yielded the following results:

- Substantial increase in administrative penalties collected each year. Paid penalties have increased from \$312,178 in 2002 to \$531,212 in 2007.
- Average time required for an attorney to resolve a case has been reduced by 37 percent.
- Administrative appeals reduced by 90 percent.

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Iowa - Wastewater Permitting Process

State Agency: Iowa Department of Natural Resources (DNR)

Method Implemented: Kaizen event

Summary: During the fall of 2004, Iowa DNR hosted a business process improvement Kaizen event for the National Pollutant Discharge Elimination System (NPDES) permitting section of the Water Quality Bureau. This event addressed the Water Quality Bureau – NPDES Section for permit renewal, new permits, and amendments for industrial and municipal facilities. A cross-functional team of DNR staff, consultants, concerned citizens, municipalities, and environmental groups came together for this event. The objective of the event was to increase the speed and quality of the NPDES permitting process by developing a standard process with clear review criteria and better communications with stakeholders. This event culminated in the presentation of a redesigned permitting process that eliminated waste and focused resources on value-added outcomes while not negatively affecting the current level of environmental review. For example, the Kaizen event resulted in a process design that reduced the lead time for processing permits from 425 to 15 days.

Scope of the Lean Kaizen Project

Specific Process Involved: NPDES permit renewal, new permits, and amendments for industrial and municipal facilities sections

Goals and Objectives:

- Develop a streamlined permitting process so that NPDES permits will be issued before they expire and the backlog can be eliminated.
- Improve communications with stakeholders, field office staff, and others.
- Issue draft permits within 15 days of receipt of application and issue final permits before expiration date for renewals.
- Eliminate permit backlog by June 1, 2005 (eight months after the event).
- Reduce the number of times a draft permit comes back to the permit writer to zero.
- Reduce the number of incomplete applications to zero.
- Reduce the number of permits being challenged, objected to, and appealed to zero.
- Eliminate the “spike” in the number of expired permits anticipated in 2006. (The “spike” refers to the permit backlog that was created due to the high number of permits issued in 2001 that expired five years later in 2006.)
- Reduce to zero the number of permits that cannot be drafted due to non-compliance.

Year Conducted: 2004

Consultant Support: TBM Consulting Group

Process Changes and Results

During the event, participants designed a new permitting process and identified actions needed to ensure that the process worked effectively. Process changes that were implemented include:

- Revised the new applications process for NPDES permits.
- Created checklists to aid in internal review of permits and for gathering information up front.
- Drafted a transmittal letter with a frequently asked questions (FAQ) attachment to send to permit applicants with the application.
- Developed a script for a potential first call with a permit writer who is following up on an application packet. This script placed an emphasis on open-ended questions.
- Re-wrote public notice instructions to be more clear and concise.

The event yielded a process design with the following characteristics:

- Decreased permit application processing time from 425 to 15 days.
- Reduced the number of steps (the tasks or activities where work is performed) from 119 to 46.
- Decreased the number of loops (the series of steps that loop backwards and repeat themselves at least once) from 7 to 4.
- Cut the number of handoffs from 30 to 17.
- Reduced the number of decisions from 16 to 5.
- Decreased the number of delays (the points in the process where time is wasted by waiting for something to occur) from 16 to 5.

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Iowa - Environmental Staff Allocation

State Agency: Iowa Department of Natural Resources (IDNR), Field Services and Compliance Bureau, Environmental Services Division

Method Implemented: Kaizen event

Summary: In March 2007, the State of Iowa conducted a Kaizen event to develop priorities based on mandates in each program and the primary environmental concerns in each field office. By focusing on a few environmental concerns, rather than all the program areas, the bureau also developed a process to improve and maintain the consistency of enforcement actions among the six field offices.

Scope of the Lean Project

Specific Process Involved: Allocation of Resources (time and money) to Environmental Field Services

Goals and Objectives:

- Capture allocations of money and staff to make sure they are aligned with the programs they represent
- Prioritize what work activities will be completed in each program area.
- Determine what functions to continue and those to eliminate.
- Determine what the desired results are for the department and tie dollar amounts to each result.

Year Conducted: 2007

Consultant Support: TBM

Process Changes and Results

During this event, the Field Services and Compliance Bureau made a number of changes to their programs, including the following:

- Each program area developed a list of mandates and environmental concerns and then prioritized them.
- Each field office developed a list of environmental concerns and then prioritized them.

The project yielded the following results:

- Development of a priority list of activities for each program area.
- Reallocation of three vacant FTEs based on the workload of offices.
- Revision to budget tracking which now is done by program area and field office location.

For More Information

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Indiana - Air Compliance and Enforcement Processes

State Agency: Indiana Department of Environmental Management (IDEM), Office of Air Quality, Compliance and Enforcement Branch

Method Implemented: Kaizen Approach Using Value Stream Mapping (VSM)

Summary: The Office of Enforcement was reorganized in November 2008 to place each of the media enforcement programs into the various media compliance programs (Office of Air Quality, Office of Land Quality, and Office of Water Quality). The reorganization was designed to help improve IDEM's ability to use the various compliance tools, enforcement tools, and resources to improve compliance in each of the media programs. This was designed to create a more efficient process to address and resolve noncompliance, allow inspectors to follow compliance issues through resolution, and merge enforcement case management with the technical resources needed to resolve these cases. The process was also designed to realize some efficiency by bringing enforcement case managers into the compliance programs

In February 2009, the Office of Air Quality (OAQ) Compliance and Enforcement Branch conducted a value stream mapping event using a Kaizen approach to map the current compliance and enforcement processes. The event mapped the noncompliance resolution process that involved the identification of noncompliance and the preparation of an enforcement referral by inspectors in the OAQ Compliance Branch that was then forwarded to enforcement case managers in the Office of Enforcement for processing and resolution. The event culminated in the presentation of the redesigned noncompliance resolution process that integrated former inspectors and enforcement case managers into compliance and enforcement managers that would be responsible for a case from the identification of noncompliance to resolution of the noncompliance. The mapping event helped to reduce processing time, the number of steps involved and the number of handoffs, while maintaining the number of value-added steps. The process also improved the communication efforts with sources and companies to get them back into compliance more quickly.

Scope of the VSM Project

Specific Process Involved: Air Compliance and Enforcement Process

Goals and Objectives:

Develop an integrated OAQ Compliance and Enforcement noncompliance resolution process.
Increase the involvement of the inspectors who are most knowledgeable about the sources.
Decrease the time it takes sources to get back into compliance after noncompliance is identified.

Year Conducted: 2009

Consultant Support: None. IDEM's Office of Air Quality conducted this event with facilitation support by the Office of Pollution Prevention and Technical Assistance.

Process Changes and Results

During this event, IDEM made a number of changes to the compliance and enforcement process, including the following:

- Revised the Inspection Summary letter template to include an invitation to the source to discuss the case details and enforcement process earlier in the process to facilitate the exchange of information and expedite the process.
- Revised the case packet routing sheet to reflect the new process.
- Revised the Section Chief checklist to facilitate the review of the packet to maintain consistency and reduce review time.
- Developed standard email templates to be used to email inspection summaries, notices of violations, and proposed agreed orders to affected source to reduce notification time and assure proper routing.
- Defined the Office of Legal Counsel and Deputy Attorney General staff responsibilities to ensure that the proper legal resources are used in an efficient manner.
- Established a standard timeline for the source to respond following receipt of the inspection to facilitate the timely exchange of information and ultimate resolution.
- Revised a briefing memo to incorporate all of the information that is needed to initiate the resolution process and maintain contact with the source and identify database entry needs.
- Created a guidance/checklist to be used when meeting with a source to facilitate the exchange of information and to focus the purpose of the meeting to ensure that internal and external resources are used effectively.

The project yielded the following results:

- Reduced the number of process steps from 193 to 146.
- Reduced the number of handoffs from 45 to 23.
- Maintained the number of value added steps at nine while increasing the percentage of value-added steps of total steps from 4.6 percent to 6.2 percent.
- Decreased process time from a maximum of 500 days to an anticipated maximum of 345 days.

More Information

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Indiana - Office of Air Quality Permitting Process for Significant Source Modifications

State Agency: Indiana Department of Environmental Management (IDEM), Office of Air Quality, Permits Branch

Method Implemented: Kaizen event

Summary: The week of October 5, 2007, IDEM conducted a Kaizen event to improve the permitting process for Significant Source Modifications.

Scope of the Lean Kaizen Project

Specific Process Involved: Permitting Process for Significant Source Modifications (SSMs). The intent was to shorten the process starting at the preparation of the application and ending at the permit issuance.

Goals and Objectives:

- Reduce permit processing time from when the application is received until the final permit is issued, so that 100 percent of SSMs are issued within 120 calendar days without sacrificing quality.
- Reduce number of permits on the CUSP Report (permits identified as being at risk of being late) by 90 percent.
- Reduce hand-offs between permit branch staff by 30 percent.
- Identify the minimum amount of information needed for the permit application and make sure that the application is easy to understand and user-friendly.
- Improve customer service.
- Improve Source/Agency relationships.

Year Conducted: 2007

Consultant Support: TBM Consulting Company

Process Changes and Results

During this event, IDEM made a number of changes to the permitting process, including the following:

- Sent an Outreach Letter to sources suggesting they set up pre-application meetings when needed.
- Developed a non-rule policy document for Notice of Deficiencies (NOD) and putting applications on hold until necessary information is received.
- Updated GSD-01 to include permit level and pre-application meeting information.
- Developed a consistent permit format and standard permit conditions.
- Developed consistent checklists for administrative and technical reviews of permit applications.

The project yielded the following results:

- Prior to the Kaizen event, it took between 195-255 days for a SSM permit to be issued; since the Kaizen process, we issued these types of permits within 125 days on average.
- Reduced the number of process steps for a SSM permit to be issued from 164 to 144—a 12.2 percent change.
- Reduced the number of decisions from 16 to 12 for a SSM permit to be issued; a 25 percent change.

- Reduced the number of handoffs from 41 to 29 for a SSM permit to be issued; a change of 29.3 percent.
- Eliminated the number of process delays for a SSM permit to be issued from 31 to 24.

More Information

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Indiana - Office of Air Quality Permit Renewal Process

State Agency: Indiana Department of Environmental Management (IDEM), Office of Air Quality, Permits Branch

Method Implemented: Kaizen event

Summary: The week of December 3, 2007, IDEM conducted a Kaizen event to improve the permitting process for Permit Renewals.

Scope of the Lean Kaizen Project

Specific Process Involved: Permitting Process for the Renewal of Operating Permits. The intent was to shorten the amount of time it takes to get a permit renewal issued from preparation of the application through permit issuance.

Goals and Objectives:

- Reduce permit processing time from when the application is received until the final permit is issued.
- Reduce hand-offs between permit branch staff by 30 percent.
- Identify the minimum amount of information needed for the permit application and make sure that the application is easy to understand and user-friendly.
- Improve customer service.
- Improve source/agency relationships.

Year Conducted: 2007

Consultant Support: TBM Consulting Company

Process Changes and Results

During this event, IDEM made a number of changes to the permitting process, including the following:

- Reviewed and made changes to the content of the renewal reminder letter.
- Standardized the Notice of Deficiency (NOD) process.
- Created a streamlined process for the renewal application.
- Standardized calculations (procedure to spot check).

- Developed a consistent permit format and standard permit conditions.
- Developed consistent checklists for administrative and technical reviews of permit applications.
- Changed timing of the renewal reminder letter to six months prior.

The project yielded the following results:

- Prior to the Kaizen event the number of days it took to issue a Title 5 renewal was 928 days. Since the Kaizen process, the average is less than 270 days—a 71 percent decrease.
- Prior to the Kaizen event the number of days it took to issue a FESOP renewal was 492 days. Since the Kaizen process, the average is less than 270 days—a 45 percent decrease in time.
- Reduced the number of process steps in the renewal process from 175 to 142—a 19 percent decrease.
- Reduced the number of decisions in the renewal process from 19 to 11—a 42 percent decrease.
- Changed the number of loopbacks from eight to two—a 75percent decrease. (Loopbacks are when an application is sent from person number one to person number two, who then passes the permit back to person number one so that they can pass it on to person number three.

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Minnesota - Surface Waters Pre-Assessment and Assessment Process

State Agency: Minnesota Pollution Control Agency (MPCA)

Method Implemented: Process Mapping and Kaizen Event

Summary: Every two years, the Clean Water Act requires states to assess all of their waters for impairments and publish a list of impaired waters, called the TMDL (Total Maximum Daily Load) List. Assessing Minnesota’s waters and developing the list involves a rigorous process that takes more than two years to accomplish and is led by staff from the Environmental Analysis and Outcomes (EAO) and Regional Divisions.

In early 2008, a team from the two divisions met to map the current water quality assessment and listing process. Over the course of six months, a start-to-finish process map was completed, involving seven different teams representing various parts of the overall process. A result of that effort was a list of items that could be improved and changes that would impact the process as a whole. In late fall 2008, a condensed EAO team participated in a Kaizen event to dig deeper into improvements that could be made to the pre-assessment and assessment portions of the process.

Scope of the Process Mapping/Kaizen Event

Specific Process Involved: The scope of the Kaizen event was limited to the point where data were ready to be retrieved from applicable databases to the completion of the assessments.

Goals and Objectives:

- Streamline consistency and coordinate for all water bodies and parameters.
- Explore the idea of conducting the assessment process on a 12-month cycle to better align with the monitoring strategy and timeline (listing would still occur every two years).
- Create an action plan for implementing improvements to the process now and prior to the next cycle.
- Ensure transparency of process for staff and stakeholders.

Year Conducted: 2008

Consultant Support: PDG Consultants

Process Issues and Changes

During this event the team identified a number of issues and changes to the process, including the following:

- *Issue:* External experts were seeing incomplete pre-assessments at the Professional Judgment Group (PJG) assessment meetings.
Solution: Internal expert review takes place prior to PJG assessment meetings.
- *Issue:* Multiple locations for assessment related applications do not allow for direct feedback from internal and external reviewers.
Solution: One-stop web application. MPCA is exploring options for the one-stop-shop pilot. At a minimum, MPCA plans to consolidate all of the assessment information into a shared folder on an internal shared drive to improve access, on its way to the goal of a single location that is accessible to internal and external partners/customers. Database modifications are being planned and implemented to allow for the direct input of comments from data reviewers.
- *Issue:* Wasted time in PJG assessment meetings.
Solution: Focus PJG assessment meetings on the review of flagged items only (i.e. those assessment units where there are questions about the data). MPCA is communicating the process changes and expectations that will allow for shorter, more focused PJG assessment meetings.
- *Issue:* Incomplete automation of assessment methodology.
Solution: Enhance automation of assessment methodology, looking for opportunities for automation where appropriate.
- *Issue:* Assessment memos for every lake and wetland took considerable time and were often unused.
Solution: Eliminate written memos for individual lake and wetland assessments unless required, replacing the individual memos with a “transparency document” that summarizes the data used for the assessments. Individual lake and wetland assessment memos developed for public comment period only as needed. The management discussion has been initiated regarding the elimination of written memos unless required.

- *Issue:* Policy required staff to obtain local corroboration of transparency-tube (T-tube) data before using it. This took considerable time and often was not available or did not exist.
Solution: The team met with internal stakeholders to discuss the proposed policy change for eliminating T-tube corroboration, and management approval has been obtained. Review of T-tube data will continue to be available during PJG assessment meetings.

After four days, the group produced a list of 10 action steps, with staff and timelines assigned, to achieve improvements found in the event.

Reductions resulting from the new process:

Surface Water Description	Handoffs	Decisions	Delays	Tasks	Lead Time
Streams	44 %	17 %	43 % qty 48 % time	29 % qty 19 % time	25 %
Lakes	12.5 %	40 %	22 % qty 52 % time	11 % qty 7.5 % time	34 %
Wetlands	37.5 %	0 %	50 % qty 70 % time	33 % qty 55 % time	67 %

The group is participating in follow-up meetings to ensure that actions and improvements stay on track as the 2010 assessment cycle approaches. Steps are underway for several of the improvements to be implemented this winter/spring.

More Information

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Minnesota - Wastewater Permitting Process

State Agency: Minnesota Pollution Control Agency (MPCA)

Method Implemented: Six Sigma

Summary: In 2003, the MPCA initiated the Six Sigma Water Permitting Process Improvement Project to address concerns about the wastewater permitting process. This was the first MPCA program to apply the principles of six sigma.

The project team developed an ambitious goal of issuing 90 percent of permits within 180 days of receiving the permit application. Before the project, MPCA issued less than 10 percent of permits within 180 days. The team set out to meet the 90 percent goal by the end of 2005. MPCA personnel trained as six sigma black belts and green belts oversaw the project through the six phases of six sigma implementation—Define, Measure, Analyze, Improve, and Control. The project is currently in the control phase. Although the goal of completing 90 percent of the permits within 180 days has not yet been met, MPCA continues to see an overall reduction in the average number of days it takes to issue permits and has increased the percentage of permits issued within 180 days to 75 percent.

Scope of the Six Sigma Project

Specific Process Involved: Water quality regular facility (minor facility) point source permitting program

Goals and Objectives:

- Increase the percentage of permits issued within 180 days from 9.42 percent to 90 percent by December 2005.
- Pick up permit applications within two weeks.
- Reduce staff work time for permits from more than 60 hours to less than 40 hours for construction permits and less than 20 hours for non-construction permits.

Year Conducted: 2003-06 and on going

Consultant Support: University of Minnesota Carlson School of Management trained MPCA staff as champions and coaches at the six sigma green and black belt levels. Together with trained staff, University instructors assisted in the development of deployment models for the NPDES project.

Process Changes and Results

The MPCA project team conducted the following activities to improve the permitting process:

- Used information gathered from interviews with internal customers (water permit staff and other staff who contribute to water permitting) and external customers (governmental and private permit applicants and environmental consultants) to clarify the problem, and then summarized customer needs.
- Used a risk matrix to propose permit options and to determine the depth of review needed for different types of permit applications.
- Established and aligned program priorities among functional areas.
- Formalized decision-making processes and set timelines for decisions at all levels.
- Revised the permit content to reduce length.
- Improved the functionality of permit writing tools and databases.
- Created manuals for permit writers and formalized staff mentoring processes.
- Created a permit forum process to allow permit writers a place to quickly discuss and decide issues with senior staff. This forum process builds consensus and consistency.
- Designed an application review process to determine administrative and technical “completeness” of permits.
- Instituted a time tracking process to understand and better manage how staff time is spent.
- Hired a permit coordinator to “manage” the permit processes.

- Focused on issuing more general permits since they are easier and faster to issue than individual permits.
- Created feedback loops to improve communication, manage expectations, and ensure progress towards goal is being made.

The project yielded the following results:

- Increased the percentage of permits that are issued within 180 days from 9.42 percent in 2003 to 75 percent in 2006.
- Reduced the time needed to issue permits from an average of 300 days in 2003 to 191.8 days in January 2005.
- Decreased the water point source permit backlog from 20 percent to 8.5 percent.
- Reduced permit application review time so that all applications are reviewed faster (typically within two weeks) and incomplete applications are identified sooner.

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Nebraska - NPDES Permitting Process

State Agency: Nebraska Department of Environmental Quality (NDEQ)

Methods Implemented: Kaizen Event

Summary: The NDEQ held a week-long Kaizen rapid process improvement event in February 2009, aimed at improving its National Pollutant Discharge Elimination System (NPDES) permitting process. As regulation changes, NPDES permits are becoming increasingly complex and difficult to write. NDEQ NPDES permit writers and reviewers needed improved tools to make permit writing and review faster and easier. Additionally, the NPDES Unit wanted to ensure that permits consistently apply regulation to all regulated facilities and are easily understood by the regulated facility.

Scope of the Lean Kaizen Project

Specific Process Involved: NPDES Permitting

Goals and Objectives:

The NPDES Permitting team set out to achieve many goals and objectives, including:

Goals:

- Reduce 180 NPDES permit issuance deadlines.
- Make NPDES permit applications available on NDEQ’s webpage.

- Eliminate the NPDES permit backlog.
- Reduce by 50 percent the number of times a draft permit is returned to a permit writer for corrections.
- Streamline tracking.
- Develop permits that apply regulations consistently to all regulated facilities.

Objectives:

- Review a permit and fact sheet once.
- Reduce overall time spent on the permit writing process.
- Decrease the time it takes for internal review of draft permit and fact sheet.
- Enable internal reviewers to focus reviews on their areas of expertise.
- Enable applicants to submit timely, accurate, and complete applications.
- Simplify permits.
- Ensure that permit writers consistently use standardized templates for writing permits.
- Ensure that permit writers focus on content, not format. (Format is built into the template.)
- Update on a regular basis the status of permit applications on webpage.
- Make certain that accurate information is available for permit writing.
- Ensure the clarity of the elements of a permit and fact sheet.
- Create standard operating procedures for writing permits.
- Ensure effective communication between permit writer, engineering and compliance inspector in planning inspections.

Year Conducted: 2009

Consultant Support: Cindy Miesbach, Nebraska Dept of Environmental Quality and Mike Rohlf, Iowa Department of Management co-facilitated the Kaizen.

Process Changes and Results

Nebraska DEQ is implementing a number of changes as a result of the Kaizen event, including:

- Standardizing permit template language.
- Utilizing currently existing database to streamline permit writing.
- Centralizing waste load allocation calculations for all permit writers' use.
- Updating regulation, applications, and standard conditions to include all regulatorily required elements.
- Writing permits electronically.
- Improving coordination with EPA Region 7.

Flowchart mapping of the current permit writing process and the redesigned process laid the groundwork for IT staff to develop an electronic application to support the permit writing process. IT staff estimated that they would have spent over a year gathering the background technical information required to develop the electronic permit writing application. In the Kaizen week, the team provided that background information and recorded it in the process flowcharts, thereby saving a year of application development time and speeding implementation of the much needed permit writing application.

The team has set follow-up meeting throughout the next year to ensure that implementation proceeds as planned.

More Information

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Nebraska - Air Construction Construction Permitting Process

State Agency: Nebraska Department of Environmental Quality (NDEQ)

Methods Implemented: Kaizen Event, On-Going Process Reviews, and Evaluations

Summary: The DEQ, in response to a dramatic increase in the number of air construction permit applications submitted, especially those for ethanol production facilities, held a week-long Kaizen rapid process improvement event in February 2005, aimed at improving its air quality construction permitting process. A post-Kaizen workshop followed for new staff, as well as those who did not participate in the Kaizen event. Several changes were implemented as a result of these events, including adding additional staff positions, placing an emphasis on the pre-application process, standardizing permit applications, implementing a permit review timeframe, creating a permit hotline, and establishing a permit tracking system. The changes implemented have reduced the amount of time between when NDEQ receives completed applications and starts the public comment period, and the time needed to make a decision following the close of the public comment period.

Scope of the Lean Kaizen Project

Specific Process Involved: Air Construction Permitting

Goals and Objectives:

NDEQ's Kaizen focused on all aspects of the air construction permitting process, including outreach and information, public participation and staff concerns, modeling, and the permitting process itself.

The NDEQ Director invited individuals from government and industry to be part of a Business Advisory Group to help NDEQ identify areas in the permitting process where improvements could be made. Members of the Business Advisory Group provided NDEQ with a list of recommendations in the permitting process where improvements were needed, and identified individuals from business, industry, and government to participate with the Department in the Kaizen process.

Year Conducted: 2005

Consultant Support: Gerry Allen, a NDEQ Air Quality Division staff member, facilitated both the activities of the Business Advisory Group and the Kaizen event.

Process Changes and Results

NDEQ developed a multifaceted improvement action plan that included participating in a related Kaizen event at the Iowa Department of Natural Resources and conducting a Kaizen event focused on NDEQ air construction permitting process. The Department identified possible improvements to the air construction permitting program in order to address an increased number of ethanol plant permit applications, NDEQ permit backlog, and the need to process applications within shorter timeframes.

NDEQ implemented a number of changes as a result of the Kaizen event, including:

- Standardizing permit template language;
- Requiring pre-application meetings for more complex permit applications;
- Emphasizing pre-application information and activities;
- Implementing program with agreed upon timeframes (Applicant and Department);
- Developing Ethanol and Generic Air Construction Permit Application Packages;
- Establishing a toll-free permit hotline;
- Increasing the number of Department staff positions; and
- Developing a rudimentary permit tracking system on the Department webpage.

As a result of these process changes, NDEQ has seen:

- The submittal of more complete permit applications.
- An improvement in communication with industry applicants.
- A 50 percent reduction in review time for ethanol plant air construction permits.
- A nearly 50 percent reduction in review time for all air construction permits.
- A 55 percent reduction in the air construction permitting backlog.
- Air Quality Division staff gain greater ownership of the process, empowering them to identify and address improvement opportunities.

More Information

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Oregon – Streamline Laboratory Analytical Process

State Agency: Oregon Department of Environmental Quality (DEQ), Laboratory and Environmental Assessment Division

Method Implemented: Lean Kaizen Five-Day Event

Summary: Oregon’s Department of Environmental Quality’s Laboratory and Environmental Assessment Division analyzes 90 percent of the department’s environmental samples. Several sections within the division such as the organic, inorganic, land, air, water, and technical services sections, share responsibility for the different types and phases of analysis.

DEQ convened a 14-member Kaizen team to streamline the analytical process, which had become bogged down with multiple layers of checks and balances and inefficient tracking tools, often resulting

in extended timeframes for analyses. The Kaizen team included DEQ staff from various programs across the state and three external volunteers chosen from the private sector for their expertise.

The team came up with 28 action items to improve current turnaround time by 50 percent and formed a team to perform follow-up to swiftly implement the action items. The team continues to meet weekly.

Scope of the Lean Kaizen Project

Specific Process Involved: This Kaizen exercise focused on the turnaround time from receipt of a sample at the DEQ laboratory through release of the case report.

Goals and Objectives:

Goals

- Improve sample turnaround time by 50 percent.
- Reduce steps by 40 to 55 percent.
- Improve client satisfaction by 10 percent.

Objectives

- Identify reliable metrics and establish incremental goals.
- Meet holding times.
- Establish reliable end-to-end turnaround times and case- measurement cycle times.
- Define client expectations for timeliness.

Year Conducted: November 2008

Consultant Support: Guidon Performance Solutions

Process Changes and Results

Proposed process changes: The team identified 93 steps in the life of a lab sample, including multiple decision points and hand-offs, almost all of which included wait times. The team mapped the process on a 40-foot wall chart, then got to work discussing steps, discarding redundant components of the process, and discussing system improvements.

LEAD Lean - Kaizen Metrics

	Current State	Future State	% Change
Steps	93	54	- 42%
Decisions	17	8	- 53%
Electronic hand-offs	10	4	- 60%
Physical hand-offs	26	4	- 85%
Loop backs	9	4	- 56%
Waits	16	10	- 38%
Value Add steps	3	3	N/C
Value Add %	3.2%	5.6%	72%

Results accomplished within 60 days:

The Kaizen project helped lab officials review and examine the analysis process and see it in a new way. Significantly, they noted that the lab had many excellent existing electronic system capabilities

and tools that staff had not earlier sufficiently explored and employed because of ongoing deadlines. Some of the “quick fixes” and early and effective changes in the process include:

- Implementation of a bar code system for water quality samples. The system puts into use the lab’s three electronic barcode readers that operate on its current computer system, cutting processing time and increasing lab accuracy.
- Reexamination and retooling of an internally developed, yet unused, electronic Lab Information Management System that includes many of the critical required fixes the Kaizen group identified. The system implementation date is March 2009.
- Incorporation of a program to upload data directly into the databases thus reducing or eliminating multiple human error-related quality checks.
- Creation of a new, more effective and easy-to-understand Quality Control Report.
- Creation of new electronic tools to track samples and their movement within the various sections.

More Information

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U.S. EPA - Corrective Actions Tracking Process

Agency: U.S. EPA, Office of the Chief Financial Officer

Method Implemented: Kaizen event (five-day event)

Summary: In December 2008, EPA’s Office of the Chief Financial Officer (OCFO) conducted the Agency’s first completely internal Lean Kaizen event. A team of OCFO managers and staff examined the office’s internal process for tracking and closing corrective actions, the term for tasks OCFO has committed to doing as a result of an audit or self-assessment. Specifically, the process was scrutinized from the point at which an Office of Inspector General (OIG) or A-123 corrective action plan was approved until the corrective action was closed. The process was taking too long, was not standard, involved duplication of effort, and did not meet customers’ needs.

Scope of the Lean Kaizen Project

Specific Process Involved: EPA Internal Corrective Action Tracking Processes (OIG & A-123)

Goals and Objectives:

- Clarify the corrective action tracking process.
- Develop a standard format for corrective action plans.
- Clarify the corrective action closeout process.
- Codify all process steps into a standard operating procedure.

The event dramatically improved efficiency by eliminating non-value added process steps, resulting in a more transparent process with increased data accessibility and improved customer satisfaction.

- *Goal:* Reduce missed milestones by 100percent (e.g., no missed corrective actions).
Results: TBD pending 60-day review. The team developed a spreadsheet tool to support the new process and increase transparency.
- *Goal:* Reduce rework and duplication by 75percent (e.g., reduce the status-check phone calls, e-mails, and fire-drill mentality).
Results: TBD pending 60-day review. The first cycle involved training people on the new process and tool.
- *Goal:* Reduce status update time by 50percent (e.g., create one central place for data).
Results: TBD pending 60-day review. The first cycle involved training people on the new process and tool.

Year Conducted: 2008

Consultant Support: Simpler Consulting

Process Changes and Results

The biggest changes in the new process included:

- Development of a centralized spreadsheet tool on its own shared computer drive for inputting status on corrective actions.
- Adoption of a policy and standard operating procedure to input data in the central spreadsheet.
- The new ability (as a result of the spreadsheet) to create reports for senior management on a regular schedule.

The event yielded the following results:

OIG Correction Action Tracking Process

- 86 percent reduction in number of hand-offs (from 92 to 13).
- 68 percent reduction in time to process an OIG Action (from 324 hours to 104 hours).
- 62 percent reduction in total number of steps (from 16 to 6).

A-123 Corrective Action Tracking Process

- 74 percent reduction in number of hand-offs (from 31 to 8).
- 46 percent reduction in time to process an A-123 Action (from 185 hours to 100 hours).
- 63 percent reduction in total number of steps (from 8 to 3).

Implementation:

Since the event, participants have been working to implement the new tracking tool and update the process. This new tool was released in January 2009 for testing and refinement. Staff and managers are pleased that the new process eliminates numerous unnecessary status checks and hand-offs that caused delays, and are also glad to have summary reports available for review.

Continued follow-up by the Lean facilitator, team leader, event participants, and OCFO management has been integral to maintaining a focused effort to implement the new corrective action tracking process and fulfill the goals of the project.

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Vermont - Wastewater Permit Process

State Agency: Vermont Agency of Natural Resources, Department of Environmental Conservation (DEC), Wastewater Management Division

Method Implemented: Kaizen event

Summary: In July 2007, the State of Vermont took universal jurisdiction over all wastewater systems and water supply systems with design flows of less than 6,500 gallons per day (gpd). The Wastewater Management Division of the Vermont DEC anticipated an increase in applications for wastewater permits due to this change. In anticipation of this regulatory change, the Wastewater Management Division conducted a Kaizen event in 2006 to improve the state's on-site wastewater permitting process.

The result of the event was a redesigned permitting process that eliminated waste and focused resources on value-added outcomes while preserving the current level of environmental and public health protection. The process helped to reduce the amount of time that it is now taking to process these permit applications. For example, prior to the Kaizen project the longest period of staff time it took for a permit to be issued was 542 days; since the event, the longest period of staff time it has taken to get a permit issued has been 34 days.

Scope of the Lean Kaizen Project

Specific Process Involved: On-Site Wastewater Permitting Process

Goals and Objectives:

- Reduce permit-processing time (lead time) by 50 percent (while using the same environmental review standards).
- Improve productivity by 100 percent.
- Develop a system for identifying permit applications that do not need technical review and/or do not require a permit.
- Improve coordination between the five regional offices and establish clear priorities for the program.
- Increase accountability of designers (permit applicants).
- Simplify rules and policies.
- Enhance the permit database to include a compliance checklist, improve tracking capability on permits, and allow the public access to the database.

Year Conducted: 2006

Consultant Support: Guidon Performance Solutions

Process Changes and Results

The Wastewater Management Division made the following changes to the on-site program's permitting process:

- Adopted a new policy of returning administratively incomplete applications to the designer for completion.
- Revised the permit application form to facilitate application reviews, database entry, permit writing, and eventual targeting of project reviews.
- Developed a consistent permit format and standard permit conditions.
- Developed consistent checklists for administrative and technical reviews of permit applications.

The project yielded the following results:

- Prior to the Kaizen event the longest period it took a permit to be issued was 542 days; since the Kaizen process, the longest period it has taken has been 34 days.
- Reduced the number of process steps from 150 to 38 a 75 percent reduction.
- Reduced the number of decisions from 31 to 5.
- Eliminated the number of handoffs from 18 to six.
- Changed the number of loops from five to two. (Loops are when an application is sent from person number one to person number two who then passes the permit back to person number one so that they can pass it on to person number three.)
- Eliminated the number of process delays from 39 to three.

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Wyoming – Air Quality Permitting Process

State Agency: Wyoming Department of Environmental Quality (WDEQ), Air Quality Division

Method Implemented: Kaizen event

Summary: The WDEQ received funding from the legislature to implement a new agency-wide Information Technology (IT) system. A completely new system, it will be implemented in phases as environmental programs are integrated one-by-one into the system. The Air Quality Division's New Source Review (NSR) program is one of two programs selected for the first phase of implementation. Minor source oil and gas permitting is the first Air Quality business process targeted for implementation into the new IT system.

Recognizing the rare opportunity of establishing new electronic business processes afforded by building a brand new IT system, NSR is undertaking an internal review of the existing business

processes associated with minor source oil and gas permitting. Results from the internal review guide the IT implementation efforts for the oil and gas minor source permitting process and reduce the number of non-value added activities integrated into the agency-wide electronic system.

Scope of Lean Kaizen Project

Specific Process Involved: Review of the air permitting process for oil and gas production facilities from the time the well is completed until the NSR permit is signed.

Goals and Objectives:

Objectives

- Reduce paperwork.
- Define critical information necessary for technical review.
- Create electronically transmissible permits (managed by IT system).
- Eliminate duplication of effort.
- Evaluate when an application is required.
- Evaluate reporting requirements.

Goals

- Reduce backlog by 50 percent
- Reduce overall lead time on new applications to 80 days.
- Reduce number of submittals for multi-well pads to one.
- Reduce incomplete applications by 50percent.

Year Conducted: 2007

Consultant Support: Guidon

Process Changes and Results

- Create standardized checklist and identify information to be submitted.
- Contact county clerks concerning certification letters vs. electronic.
- Create a letter to the applicants on email versus hard copy in PDF format.
- Develop standard operating procedures for Public Notice with electronic delivery to newspaper.
- Develop standardized cover sheet.
- Develop a plan to eliminate backlog.
- Develop timeline for signatures.
- Formalize process to determine when calculations are run.

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RESOURCES

ECOS, in collaboration with EPA, has been working to support state agency efforts to become familiar with and utilize lean processes. Recent EPA/ECOS documents include the *Lean in Government Starter Kit*, *Working Smart for Environmental Protection*, and the *Lean in Air Permitting Guide*.

EPA is working with states and ECOS to update and issue a new Version 2.0 of the *Lean in Government Starter Kit*.

For more State information, including live links to all State Lean websites, see the complete *Inventory of State Lean Events and State Contact Information* located on the ECOS Lean project page <http://www.ecos.org/section/projects/?id=2292>.

For more information on EPA's initiatives, visit the EPA Lean Government website at <http://www.epa.gov/lean/admin.htm>.

Oregon DEQ Kaizen Team – Ready to Celebrate!



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