

**OPERATIONAL APPROACH FOR DEVELOPING
A POLLUTION PREVENTION
BY
DESIGN PROJECT**

**A Model developed from Denver International Airport's
Pollution Prevention Project**

**U.S. Environmental Protection Agency
Region VIII**

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OPERATIONAL APPROACH FOR POLLUTION PREVENTION BY DESIGN

OBJECTIVES

The objective of the partnership with the City and County of Denver's New Airport staff is to encourage the development of pollution prevention concepts in the planning, design, construction, operation and maintenance of Denver International Airport (DIA) that will protect air, water and land resources and result in long-term benefits to the community.

BENEFITS

The Pollution Prevention Partnership by Design concept is a win/win situation for all participants--City and County of Denver and the DIA staff, EPA as a Region, the EPA multi-media P2 team, and the on-site coordinator.

The benefits reaped by EPA through this type of partnership include:

- o The opportunity to establish long-term constructive partnerships;
- o A higher profile for EPA's non-regulatory role, as advocated by Administrator William Reilly;
- o The opportunity to build multi-media pollution prevention into design, construction, operation and maintenance of a large operating facility;
- o Identification of opportunities for involvement and innovation through greater awareness of current planning and accomplishments;
- o The opportunity for EPA and its partner(s) to gain pollution prevention technical expertise;
- o An effective and efficient means to attain federal and state environmental goals without lengthy and costly enforcement actions;
- o Conservation of natural resources; and
- o Providing economic growth while minimizing environmental damage, thereby effecting a more competitive nation on an international scene.

STEPS TO MAKE IT HAPPEN

Step 1: IDENTIFY YOUR PROJECT

General Tips

It is important to carefully evaluate potential projects. Consider such factors as project schedule, type of operations, opportunities and feasibility for change, and political acceptance of EPA's role. EPA will have greater opportunity to encourage pollution prevention activities if the project is in the planning stage, if operations involve management of EPA regulated waste streams, and if you have management support from the facility. Avoid projects involving litigation or cost recovery actions with EPA.

DIA Model

EPA Region VIII selected the DIA pollution prevention project due to the potential for significant environmental and public health impact to the Denver Metropolitan Area from airport operations. These issues were identified during the National Environmental Policy Act (NEPA) process and incorporated as suggestions in the final Environmental Impact Statement.

Many of the environmental issues encountered in designing and constructing DIA are not addressed under current environmental requirements. By working proactively with DIA's planners and engineers outside of a traditional enforcement role, EPA Region VIII was able to influence design, construction, and operation and maintenance activities to ensure that airport operations will be compatible with the surrounding environment.

In general, consider projects which:

- o Are consistent with EPA Regional and national priorities, i.e. high risk and geographic targeting;
- o Have the potential for multi-media application;
- o Are at the planning stage (prior to final design and construction or initial retrofitting);
- o Offer application of P2 through the NEPA process (can be used as a catalyst), if applicable; and
- o Present an opportunity for acceptance and mutual cooperation.

Step 2: LAY THE GROUNDWORK

General Tips

Identifying key decision makers within your Region from the various Regional program offices is crucial to ensuring that the selected project has Region-wide support. By gaining consensus among all key decision makers, the project will have a greater chance of succeeding since these key players control resource allocation for the project.

DIA Model

Unanimous support from EPA Region VIII Senior Management was acquired prior to the initiation of the DIA project. A Regional "Project Champion" was identified with the task of soliciting this support, resolving outstanding issues related to the project, and coordinating activities among the various EPA programs. Direct communication occurred between the Regional Administrator and the Mayor of Denver.

To initiate the partnership project, we recommend the following:

- o Obtain the support of Senior Management of EPA, the selected facility, and local government;
- o Identify a Regional "Project Champion" to provide enthusiasm, perseverance, and basic organizational functions; and
- o Obtain a commitment for the appropriate financial and human resources.

Step 3: FORM A PARTNERSHIP WITH THE SELECTED FACILITY

General Tips

A partnership with a selected facility can only succeed under a foundation of mutual trust, respect and cooperation. Building a bridge with your partner is a task which requires a sensitivity and understanding towards the partners' over-arching objectives. In some respects, your partner should be viewed as the customer and EPA as the provider of technical and regulatory information.

DIA Model

For the DIA project, the EPA Region VIII Administrator met personally with the DIA Construction Project Manager and later with the Mayor of Denver to discuss objectives and offer assistance. As the project progressed, EPA's Senior Management offered to invest greater resources in a full-time, on-site EPA coordinator. A Memorandum of Understanding formalized this commitment and set forth objectives, responsibilities and other details of the partnership.

To form a partnership with a select facility, we recommend using the following mechanisms:

- o A Memorandum of Understanding documenting each party's responsibilities and expectations; and
- o An Intergovernmental Personnel Act (IPA) assignment committing human resources to Federal, state, tribal, or local projects.

Step 4: FORMULATE A MULTI-MEDIA P2 TEAM

General Tips

Having completed the agreement with the facility, you will need a structure within your Region to help provide technical and regulatory expertise. Establishment of a cross-media team representing all Divisions will facilitate this communication and assistance. Real success ultimately lies in the enthusiasm and commitment from individuals on the P2 team. Working with TQM principles, these members value pollution prevention. They are proven "doers" who have integrated P2 into their respective Division's activities. These members have the responsibility to research state-of-the-art issues, secure additional resources, and transfer information to and from their Divisions.

DIA Model

EPA's DIA Team members invest approximately 20 hours per month, providing advice and recommendations to the on-site coordinator. The Policy Office has the lead role in facilitating internal communications and coordination, contributing approximately 20-40 hours per week. The on-site coordinator provides monthly progress reports to the team and reports directly to the DIA Environmental Manager. This structure creates a cooperative, open atmosphere.

When compiling a project team, consider the following:

- o Select a team leader or chairperson to facilitate internal communications and coordination;
- o Identify members from all relevant Regional Divisions to ensure multi-media participation and obtain support from their management; and
- o Consider the need for an EPA pollution prevention coordinator on-site at the new airport office;

Step 5: SELECT AND IMPLEMENT ACTIVITIES

General Tips

For the EPA project team to function effectively, it is important to set specific ground rules pertaining to internal communication and coordination at the onset of the project. In particular, it is important to reach an understanding within the team regarding project goals, EPA program expectations, individual roles and responsibilities, and internal communication procedures. Communication of project activities is crucial for the team to be aware of P2 opportunities.

DIA Model

DIA projects can be recommended by DIA staff, the on-site coordinator or the EPA team, but all parties have to approve activities. Projects should be consistent with EPA program goals, as specified at the onset of the project. The multi-media impact of all proposed recommendations are considered jointly by the team. Monthly progress reports and meetings ensure timely communication. At a crucial stage of EPA's involvement, DIA's construction project manager briefed EPA's Senior Management of DIA plans and activities. To maintain a level of interest and increased understanding by EPA's Senior Management, DIA staff provided a guided bus tour of the DIA construction site.

The following procedures can be helpful in effective implementation of activities:

- o Team members prepare a ranked list of their respective Division's goals for the project;
- o Projects are jointly agreed upon by the P2 team, the on-site coordinator and DIA;
- o The team, with leadership from the on-site coordinator, coordinates procedures for implementation of the project, including consultation and information exchange;
- o On a level of expertise outside regulatory issues, EPA must be willing to research and identify cost effective P2 alternatives;
- o To monitor the progress of activities and keep abreast of issues, the team and on-site coordinator meet monthly; and
- o The on-site coordinator briefs EPA Senior Management and provides recommendations regarding the level of EPA investment in the project, with advice from the team.

Step 6: MEASURE SUCCESS

General Tips

Although success is more easily calculated by EPA's involvement in specific projects, a follow-up stage is important to quantify results. These measurements and results should be compared to the major risk areas identified by the Region, and the Region's priorities, as well as the Agency's Ten Themes and priorities.

DIA Model

A final stage of the project will allow Region VIII to monitor, document and evaluate the results. Potential follow-up activities will verify implementation of recommendations and expectations. Workshops will provide training on interpretation and implementation of recommendations, i.e. tenant lease agreement terms, audit findings. We plan to work with DIA staff to also concentrate on outreach and public education of the environmental efforts undertaken at DIA.

Step 7: AVOID PITFALLS

General Tips

Building a bridge of trust takes more than funding or an offer of assistance. It takes a lot of time and persistence. Since the P2 team is participating in an advisory capacity, the team must be sensitive to issues and concerns it does not deal with in its traditional enforcement role. EPA is only one player that the facility operators have to deal with, and environmental considerations are not always first priority. The "financial reality" of the private sector affects decision making.

DIA Model

The DIA project has been an on-going learning process for EPA, and it was intended to be. Some of the situations cannot be foreseen. For instance, DIA's recommended centralized handling of glycol affects airline employees' work assignments and consequently involves airlines' contractual terms with the unions. We need to be sensitive and keep a wide perspective outlook.

Being aware of certain issues can increase the chances of success of your project, including the following:

- o Working under contract deadlines, time is always a consideration--additional environmental planning might result in additional time constraints;
- o The bottom line is economics when most budgets are limited;
- o Private sector motivation can affect decisions;
- o Know your "stakeholders" -- internal politics within the state or governmental entities as well as the private sector can add "hidden agendas" that are not easily foreseen;
- o Share success with the facility -- it can be easy for EPA to take credit for environmentally sound results when the facility makes the decisions and implements projects; and
- o Lack of EPA technical capabilities for state-of-the art P2 issues can hinder achievement of project goals.

TRANSFERABILITY TO OTHER PROJECTS

The concept of EPA entering into a partnership agreement with the regulated sector has broad applicability in promotion of pollution prevention. The EPA "Green Lights" energy conservation program is based on this premise.

Other potential partnership possibilities include:

- o Public works projects, (i.e. highways, airports, '96 Olympic facilities);
- o Federal facility operations (new or retrofitting), including national parks; and
- o Major private sector initiatives.

CURRENT DIA ACTIVITIES

Project activities fall into the priorities identified by the EPA Airport P2 Team and approved by DIA--water conservation/non-potable reuse, stormwater/deicing fluids/pretreatment and groundwater protection, indoor air quality, use of alternative fuels, travel reduction measures, hazardous and solid waste management, and public education. The City and County of Denver's new airport environmental manager, planners and engineers and EPA's P2 Team, led by the on-site coordinator, cooperatively worked on numerous projects with significant results. These results opened the door for assigning an EPA liaison to work on outdoor air quality with an emphasis on a rail link to DIA.

Anticipated FY92 EPA Resources: \$192K, 1.9 FTE

- A pilot test conducted at Stapleton could encourage use of wall hung ultra-low volume toilets which would save enough water during the first year of airport operations to serve 1,575 families.
- Evaluation of cathodic protection requirements could reduce corrosion of underground pipes and tanks, which was the major cause of leaks at Stapleton operations.
- Evaluation of electrical reliability requirements for wastewater pump stations will help ensure continual operation of wastewater systems.
- DIA's proposed management of glycol helps define best management practice (BMP) standards for glycol ethylene management in the country, i.e. containment and reclamation for offsite processing into a marketable product.
- Revising implementation of the storm water permitting process ensures full accountability of operators managing hazardous waste.
- A Hazardous Waste Audit of the new airport construction site verified compliance of regulatory requirements and evaluated construction waste minimization efforts.
- EPA's on-site coordinator served as the project manager of a solid waste management study of DIA operations, provided to the City through a \$210,000 grant with the State Office of Energy Conservation. As a result of this study, the City will decrease the amount of waste sent to landfills from DIA by 30%.

- EPA, the Colorado Dept. of Health, and DIA jointly are conducting waste minimization and multi-media audits of City and tenant operations at Stapleton, beginning with the City's vehicle maintenance operations. Results of these audits will be used to modify both the City's and tenants' waste management operations at DIA.
- Evaluation of the use of recycled fly-ash in concrete verified compliance with existing guidelines for federal projects. Over 180,000 tons of recycled fly-ash concrete is being used to build DIA--equivalent to more than the solid waste recycled in a year by metropolitan Denver.
- EPA is assisting the City in developing pollution prevention guidelines to be incorporated into DIA's tenant lease agreements.
- An EPA-funded slide show documents pollution prevention concepts utilized in the planning, design, construction and maintenance of DIA is currently being used for documentation and promotion of pollution prevention.
- Reviewed permitting process with City and County.
- Provided technical assistance pertaining to ambient air monitoring activities at DIA.
- Data collected from the EPA-funded indoor air filter pilot test has prompted the City of Denver to reconsider its original selection for indoor air filters at DIA and purchase a more effective filter... both \$1 M purchases.
- Participation in Green Lights, EPA's energy conservation program, will require detailed evaluation of all lighting at DIA.
- As the Transportation Co-coordinator, EPA's on-site coordinator is promoting travel reduction measures for Stapleton employees and providing assistance in developing a travel reduction program for DIA employees.
- The EPA team is participating with water conservation and solid waste management planning and zoning strategy at Gateway, a proposed planned residential/commercial development adjacent to DIA, making this a true geographically targeted P2 effort.

- Evaluation of existing groundwater quality and a survey of existing monitoring wells will determine baseline groundwater quality prior to DIA construction activities.
- City construction engineers were trained on EPA's SARA Title III Community Right To Know reporting responsibilities of DIA construction contractors.
- Based on the knowledge gained through the DIA project, EPA was able to provide detailed comments requesting incorporation of pollution prevention measures through the NEPA process for expansion of an adjacent cargo airport.
- As a result of reviewing waste minimization and erosion control plans submitted by DIA contractors, we encouraged more recycling of construction materials and provided comments on contractor erosion (air and water) and sediment control practices.
- EPA evaluated the effects of land application of reclaimed water to underlying groundwater. The findings indicated that potential impact to groundwater from the use of reclaimed water should not be an impediment to pursuing the installation of a reclaimed water system.
- EPA critiqued contractor specifications and developed construction P2 bid specifications.
- After meeting with water providers, they agreed to install a non-potable water distribution system at DIA so that this water will be used initially for landscape irrigation.
- We are supporting DIA's Construction Project Manager in ensuring that xeroscaping techniques are used throughout the DIA area.
- We are supporting the goal of reducing vehicle miles travelled (VMT) as a result of travel to and from the new airport, including transportation options such as public transit.
- Provided technical assistance in preparing the scope of work and reviewing subsequent contractor work plan for groundwater baseline monitoring at DIA.
- Evaluated and recommended an alternative fuel policy for City and DIA tenants.

- Provided regulatory assistance regarding the new Clean Air Act Amendments and Stormwater regulations.
- Provided technical assistance regarding the P2 design and installation of above-ground and under-ground fuel storage tanks.
- EPA has also assigned a full-time employee to serve as a federal transportation liaison to the City and County of Denver to help improve access to DIA. The liaison works directly with the transportation planning staff of the City and County of Denver to secure public and private funding for a rail link between downtown Denver and DIA. This person coordinates activities between numerous national and local public and private entities to develop a unified approach and support for the rail project. This partnership has also produced significant results in a short time.