



# CASE STUDY

## Pollution Prevention Assessment for a Hotel

### Executive Summary

A pollution prevention assessment was done at a small resort hotel to demonstrate the environmental and economic value of conducting pollution prevention assessments to others in the hospitality industry. The objectives of this assessment were: 1) to understand the hotel's operating practices and their associated environmental impacts; 2) to identify pollution prevention opportunities; and 3) to identify strategies to communicate the hotel's environmental commitment to employees, guests and the general public.

The very nature of the hospitality business provides certain limitations and benefits for a pollution prevention assessment. The assessment identified a number of opportunities for the hotel to conserve water, improve water quality, reduce energy usage, reduce waste and improve environmental health and safety issues. These measures have the potential to save the hotel over US\$10,000/year. As a number of these measures depend on employee and guest behavior, an important component of realizing these savings is education and training.

While financial savings can accrue on an ongoing basis from water and energy conservation, the hotel can realize additional benefits by creating a market niche for itself as a "green hotel." By demonstrating an environmental commitment, the hotel has the potential to attract additional clientele, thereby increasing overall revenue. Finally, by virtue of the hundreds of employees, and thousands of guests, who work, sleep or eat in a hotel in any given year, the hotel also has enormous potential to inform and educate people about conservation issues.

### About the Hotel

This hotel is located in a small resort community. It was built in 1989 and expanded in 1993. In total, there are 300 beds and 145 rooms. The guest facilities include a formal restaurant, terrace restaurant, bar, lobby lounge, store, outdoor swimming pool, two lighted tennis courts, substantial gardens, 350 person conference room, and night club. Ninety-five percent of the guests are holiday travelers from abroad. The principal attraction of the hotel is its location in a region with rich natural and historic resources. While the hotel earned a profit last year, it has experienced relatively low occupancy rates (35%) over the last two years.

### Environmental/Operational Issues

**Water Usage:** Fresh water is a precious resource in this region. Water use is metered as it enters the hotel. Between 70 and 200 m<sup>3</sup> of water are used per day, with an average of 91 m<sup>3</sup> per day. In 1994, water costs represented 43% of utility expenditures (water, electricity, and fuel) and 4% of total revenue.

**Water Quality:** Water quality is a significant operational and environmental issue at this hotel. Sand and calcium particulates in the water corrode and scratch the pipes and equipment that water comes in contact with, shortening their life span and impairing productivity. As a result, equipment needs to be replaced or repaired much more often than normal, and may require more energy to operate, meaning additional costs and a waste of environmental resources.

**Table 1: Summary of Recommended Pollution Prevention Opportunities**

Target Operational Area/Audience	Pollution Prevention Action	Environmental Benefit	Implementation Cost (US\$)	Direct Benefits (US\$)	Payback Period
Hotel Management	Develop preventative maintenance program	Efficient functioning of equipment	none	not quantified; efficiency	immediate
Pool	Install a pool cover	Reduce evaporation and conserve water	150	380/year	5 months
Garden	Water in evenings; use soaker hose; xeriscaping	Reduce water use	minimal	4,200/year	immediate
Guest Rooms	Install aerators	Reduce water use	580	1,025/year	7 months
Guest Rooms	Use towel/sheet cards and train staff to implement	Reduce water use and wear on bedding	130	167/year	9 months
Guest Rooms	Encourage guests to conserve water through signage	Conserve water	not quantified	not quantified; guest involvement	not quantified
Kitchen	Install toggle aerator in sinks	Conserve water	10	460/year	immediate
Pumping Room	Redesign setting tanks; filter water; soften water	Improve water quality; reduce machinery wear	not quantified	1,595/year	not quantified
Engineering	Turn off equipment when not in use; efficient equipment	Conserve energy	not quantified	2,240/year	not quantified
Propane Gas	Fix leaks; shut down stove and warmers when not in use	Conserve propane gas	not quantified	not quantified	not quantified
Solid Waste	Amenity dispensers; purchasing	Minimize waste generation	not quantified	not quantified	not quantified
<b>TOTAL</b>			<b>\$870 + costs not quantified</b>	<b>\$10,100/year</b>	

**Electricity Usage:** Electricity is used for lighting, heating and cooling, water heating, refrigeration, motors and pumps for laundry, pool, office and kitchen equipment, among other uses. Electricity represents 50% of the utility costs of the hotel.

**Propane Consumption:** Propane is supplied in returnable pressurized tanks and is used for operating the machines in the laundry and stoves in the kitchen. Propane represents 7% of the utility costs.

### Pollution Prevention Opportunities

This assessment identified numerous pollution prevention opportunities that could save the facility on the order of \$10,100 each year. These are summarized in Table 1.

**Preventative Maintenance:** Develop a comprehensive preventative maintenance program for hotel operations to ensure efficient functioning of all equipment and procedures.

**Water Conservation:** There are several areas in which there are opportunities to conserve water.

**Pool:** It takes 300 cubic meters to fill the pool, and the pool is emptied and filled two to three times per year. Using a pool cover would reduce evaporation and also keep the water cleaner. If the pool was filled one less time a year, the annual savings would be \$380.

**Garden:** It is estimated that garden irrigation represents roughly 60% of the water used. There are several measures that can be taken to reduce water use: 1) water during evening hours to reduce evaporation; 2) increase time between plant waterings; 3) use a soaker hose with pin holes to allow water to permeate the soil more deeply; 4) spread a natural mulch around the base of each planting to reduce evaporation; 5) practice "xeriscaping" (a gardening technique using native, drought resistant plants); 6) use lower quality water in the garden. If 10% of the water currently used for the garden is conserved, annual water savings would be 3,000 m<sup>3</sup>. Saving on the water bill would be \$4,200/year.

Figure 1: Statement of Environmental Commitment

**Our Commitment to the Earth**

*We welcome you to this spectacular region of the world. For countless generations the people of (city) have relied upon and revered the natural wonder of this region. Its magical gift has been the very foundation of life. As a local business, we share this respect for all resources and recognize our responsibility to preserve them for the future. We pledge to undertake an ongoing process to create and refine a comprehensive environmental program.*

We will bring the same vitality to this effort that the natural surroundings bring to this region. In our actions and decisions we pledge to:

- ◆ Identify and actively reduce our consumption of water, energy and other raw materials.
- ◆ Search out new products that will minimize our impact on the local environment.
- ◆ Become a living example to others of what is possible to achieve.

We also pledge in all of our actions to always maintain the high standard of service we wish for you, our guest.

Please join us in our shared quest to nurture ourselves and our planet.

*Signed*

*Hotel Owner* *Hotel Manager*

**Guest Rooms:** 1) Install aerators in showerheads and sinks to reduce flowrates. Annual savings would be \$1025/year. 2) Reduce Laundering of Towels and Sheets. Give guests the option of reusing towels and sheets if they are staying more than one night. If 10% of the guests opt to reuse their sheets and towels, the hotel could save \$110/year in water fees; additional savings will accrue from reductions in energy and detergent use. This is also an opportunity to inform guests about the hotel's commitment to resource conservation.

3) Post "eco plaques" visibly in the bathroom to encourage guests not to throw garbage down the toilet, or to run the sink water when not needed.

**Kitchen:** 1) Fix any leaks in faucets or dish washing machines. 2) Install a sprayer-nozzle and or aerators on the dish washing and food prep sinks so that water does not run continuously. This will cost \$10; annual savings are \$460/year.

**Water Quality:** Improve water quality by filtering water and adding softening agents. The savings from improved water quality will be seen in numerous ways. One area is in reduced purchase costs of new equipment damaged by poor water quality. Replacing all guest room boilers would cost \$7,975. If all boilers

need to be replaced during a five year period due to corrosion, the annual cost would be \$1,595.

**Electricity Consumption:** Several measures can reduce energy use: 1) determine whether it is possible to lower the temperature in the guest rooms; 2) turn off the 30 exterior lights when not needed; 3) improve guest accessibility to light switches to encourage a "lights off" policy; 4) purchase energy efficient appliances and equipment. If these measures save 5% of the electricity bill, savings would be \$2,240/year.

**Propane Gas Consumption:** Eliminate leaks to reduce costs and address safety concerns. Turn stoves and food warmers off between meals, during low occupancy, and when not needed.

**Solid Waste:** When making decisions on new products for the hotel, management should seek to maintain efficient practices and avoid excessive packaging. In particular, avoid single serving containers in restaurants, consider amenity dispensers in bathrooms, and purchase local products when possible as they typically have less packaging and cost less to transport. The hotel should also continue and expand its practice of returning wine and beer bottles, plastic crates for produce, natural gas tanks, and some of the containers from chemicals and cleaners to the vendors.

## Environmental Communication, Education and Outreach

Communication, education, and outreach are critical to any aspect of the hospitality industry. While operational initiatives are important, communicating the hotel's environmental commitment, educating staff and guests, and reaching out to external audiences will enable the hotel to achieve the greatest benefits. These efforts should be directed at a number of audiences:

**Hotel Owners and Management:** Formulate an environmental policy to guide hotel operations. This policy should be communicated to managers and employees, and when appropriate, presented to guests. See the sample environmental policy in Figure 1.

**Employee Education and Training:** Employees need to be aware of the hotel's environmental policy and to be involved in its development and implementation. Employees can often generate insightful suggestions for pollution prevention because of their hands-on involvement in daily hotel operations.

**Guest Communication:** It is important to communicate the hotel's environmental commitment and achievements to the guests and inform them about simple actions they can take to reduce waste and protect the environment. This type of communication will encourage their support and involvement in the program. Several ideas for achieving this are:

- 1) Incorporate environmental facts and tips into existing brochures or marketing materials, or on separate environmental signs or materials.
- 2) Solicit guest input on environmental issues and specific hotel actions by adding environmental questions to the comment cards, or by creating a separate environmental survey for guests to fill out.
- 3) Expand access to and promote the natural and cultural features of the hotel, grounds and region.

Explain the importance of protecting these resources and identify ways to enjoy them. Not only will this improve guests' experiences, but will also communicate the hotel's environmental commitment and goals.

- 4) Promote the successes of the environmental program, in terms of the quantity of water or electricity saved per year, and the creative strategies taken to improve guest comfort while protecting local resources.

## Benefits of an Environmental Commitment

**Financial Benefits:** This assessment identified a number of recommendations pertaining to operational issues that could save the hotel over \$10,000/year. In addition, by creating a market niche as the "green hotel" in the region, groups and individuals may be further attracted to this hotel because of its environmental commitment. If occupancy were increased by just 1% as a result of the hotel's environmental programs, revenues would increase by \$16,500 per year.

**Service Quality:** Many of the recommendations not only show a commitment to the environment but can also improve the overall quality of service offered by the hotel. Savings can be redirected to measures that will increase guest satisfaction.

**Competitive Advantage:** Many tourists, both European and American, consider themselves "eco-travelers." In conjunction with government efforts to protect the natural surroundings, successful demonstration of good environmental practices will draw these tourists and improve the competitive position of the hotel both locally and internationally.

**Hotel Industry Association:** Once the internal program is firmly in place, there is an opportunity to establish collaborative industry-wide efforts for the benefit of the tourism sector. By leading these activities, or at the very least acting as a prominent supporter, the hotel will maintain a position at the forefront of positive change.

### For Further Information

For further information on this assessment or other activities sponsored by EP3, call the EP3 Clearinghouse at (703) 351-4004, send a fax to (703) 351-6166, or on Internet: [ep3clear@habaco.com](mailto:ep3clear@habaco.com)