

# Chapter 1: Introduction

*Whether recycled or landfilled, once waste is generated it must be managed, collected, and transported at considerable and rising expense to the University. Any effort to **reduce the generation of waste at its source** would be the most prudent approach . . . The potential benefits . . . are enough to justify the effort.*

— University of Michigan Environmental Task Force Report, 1990

As asserted by the above quotation, source reduction of waste merits serious attention as a focus for effective environmental initiatives. Following this paradigm, the University of Michigan Pollution Prevention Master's Team (PolPrev) has completed a project intended to encourage pollution prevention at U-M's Ann Arbor campus. This goal has been fulfilled, in part, by completion of a campus-wide environmental audit and two subsequent demonstration projects.

## **Document Scope and Format**

Having implemented these demonstration projects, we wished to present our experience as a guide for pollution prevention efforts at any university. Therefore, in this document PolPrev shares its experiences at U-M and provides a framework for future initiatives.

In Section I, we describe our audit methodology and present the general questions we formulated for our university-wide audit. We also describe our criteria for selecting the two demonstration projects: a pollution prevention initiative at the U-M School of Business Administration and a program to institute a university-wide chemical tracking system (CTS).

In Section II, we discuss these two demonstration projects in detail. To be more effective in our role as "outside consultant" in each project, we drew upon the theoretical principles of action research, community participation, and behavior change. Discussion of the projects is prefaced by a description of this theoretical grounding.

Our two demonstration projects are presented in a somewhat unusual format: story-like chronologies. This format best illustrates the evolution of our ideas and critical decision points; we also believe that it is most effective for giving readers a vicarious experience on which to base their pollution prevention projects.

Lastly, in Section III the group draws upon its experiences to provide an overall strategy for university pollution prevention. This section should not be viewed as a “laundry list” of potential projects, but rather as an integrated approach to such initiatives. Detailed recommendations for conducting audits, locating an area for useful intervention, and completing the implementation phase are included. We also discuss the contributions that students, staff, and university officials can make to a project’s success.

<b>Section I</b>	<b>Section II</b>	<b>Section III</b>
Environmental Audit	Methodology Business School Case Study Chemical Tracking Case Study	Recommendations and Strategies for Pollution Prevention at Universities

### **The Pollution Prevention Concept**

As defined by the U.S. Pollution Prevention Act of 1990, pollution prevention is the maximum feasible reduction of all wastes generated at production sites. Resource consumption is decreased through source reduction, energy efficiency, reuse of input materials during production, and reduced water consumption. There are two methods of achieving such reductions:

- Changes in processes (e.g., changing technology or input-material choices) and improvements in operating practices such as housekeeping, maintenance, training, and inventory control
- Redesign of products, including changing their composition or changing the use of the intermediate or end products

Federal policy further governs waste reduction efforts through the 1980 and 1984 Hazardous and Solid Waste Amendments to the 1976 Resource Conservation and Recovery Act (RCRA). As of 1992, waste minimization legislation had also been passed in 26 states. Additionally, Carol Browner, the newly appointed administrator of the U.S. EPA, has expressed a desire to shift the government’s emphasis from pollution regulation to pollution prevention.

## **Benefits of Pollution Prevention**

The positive impacts of multi-media<sup>1</sup> pollution prevention initiatives range in scale from local to global. From a business perspective, benefits include cost-avoidance in the areas of production, materials, energy consumption, and disposal. Also, reductions in pollution generation rates, and other improvements, can bolster an organization's image.

Of greater importance to the general populace are the benefits that pollution prevention can have on public health. Reductions in effluents, in air emissions, and in landfilling of solid and hazardous waste should reduce the incidence of cancer and lung related illnesses as well as health disorders caused by water-borne contaminants. Furthermore, reduced consumption of natural resources coupled with a reduction in sulfur, carbon, and nitrogen air emissions will slow the buildup of greenhouse gases and thus decrease the risk of global warming.

## **Origin of the Project**

As part of the EPA's overall commitment to pollution prevention endeavors, the National Pollution Prevention Center for Higher Education (NPPC) was created in October 1991. Sited at the U-M School of Natural Resources and Environment, the NPPC's mission is to develop materials that incorporate pollution prevention into higher-education curricula. The NPPC will offer curriculum modules, short courses, internships, and seminars for a variety of academic disciplines including business, engineering, industrial design, natural resources, public health, and law.

Colleges and universities can play a major role in the development of public policy, but they also consume vast quantities of energy and resources and generate substantial amounts of waste. As businesses and other institutions look to academia for policy guidance, it is incumbent upon universities to provide leadership and develop innovative initiatives in the environmental arena. In light of this, in 1991, Gerald Kotas (then Director of the U.S. EPA Pollution Prevention Division) challenged NPPC Director Jonathan Bulkley to establish a pollution prevention strategy for the University of Michigan. This challenge is addressed in part in this document by the members of PolPrev, whose fields of study include resource policy, environmental education, environmental advocacy, and urban planning.

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<sup>1</sup>Multi-media indicates a variety of waste types (water, air, solid waste, hazardous waste).