TOOLKIT
Terminology

What is Pollution Prevention?
Historically, pollution prevention (P2) has referred to eliminating or reducing at the source the use, generation, or release of toxic pollutants, hazardous substances, and hazardous wastes. "Reducing" means lessening the quantity or toxicity of toxic pollutants, hazardous substances, and hazardous wastes used, generated, or released at the source. Decreases in quantity or toxicity are not reductions where the decrease is solely the result of a decrease in the output of the facility. These activities are mandated under the Minnesota Toxic Pollution Prevention Act (TPPA) of 1990 Minn. Stat. § 115D and Executive Order 99-4, "Providing for the Implementation of Pollution Prevention and Resource Conservation By State Government."

Today, P2 as a discipline encompasses more than just toxic or hazardous outputs. Now included in the P2 approach are nontoxic materials, recycled and reused materials, energy, water and many other inputs and outputs. This broadened approach ensures that almost any process can be made more efficient through pollution prevention, thereby reducing the cost of operating a business or organization.

Examples of P2 that demonstrate prevention of pollution "at the source":

- Train operators in latest, most efficient and safest techniques;
- Set up adequate, regular and implemented maintenance;
- Conduct just-enough, just-in-time material purchasing;
- Check material handling, containerizing and storage conditions;
- Design production runs and schedules to optimize material use;
- Design facility layout to optimize materials storage, energy use, machine and labor time;
- Recycle materials on-site so they substitute for virgin inputs;
- Ensure no process creates a condition requiring later correction;
- Work with customer to change specs mandating poor processes;
- Substitute a safer, less-regulated or cheaper process material;
- Upgrade machinery;
- Upgrade or automate control of continuous, long-run processes;
- Redesign product so it requires less-toxic inputs to produce.

As these examples show, "at the source" means going far back into a production process or activity to eliminate waste of any kind. This contrasts with simply trying to control or treat the pollutant at the end of a discharge pipe or stack.

What is Sustainability?
Sustainability refers to an approach to problem solving that acknowledges the interconnectivity of environmental, economic and social decisions, which prevents foreseeable adverse impacts to the ability of future generations to meet their needs. Pollution prevention, resource and energy conservation, environmental restoration and enhancement are cornerstones of sustainability.

Sustainable development is defined as "development that maintains or enhances economic opportunity and community well-being while protecting and restoring the natural environment upon which people and economies depend. Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs." Minn. Stat. § 4A.07, subd. 1.

According to the April 1998 report entitled "Taking Root: State Agency Efforts Toward Sustainable Development in Minnesota," prepared by the Minnesota Environmental Quality Board, sustainable development activities can include:

- Creating well-paying jobs;
- Improving public safety;
- Recycling resources;
- Improving human health;
- Preserving air quality;
- Maintaining the state's financial health;
- Getting people involved in decisions that affect them;
- Preserving the community's character;
- Creating less waste and pollution;
- Preserving the diversity of plant and animal species;
- Fostering profitable, environmentally sound, community, supportive businesses;
- Reducing reliance on finite natural resources;
- Reusing resources (land, materials, buildings, and water);
- Reducing synthetic compounds that do not break down in nature;
- Meeting more local needs with local resources;
- Making efficient use of resources (land, water, energy or materials); and
- Using renewable resources at a rate that can be sustained over time.

Sustainability activities such as those just listed are designed with the following system conditions in mind:

- Avoid contributing to the buildup in the environment of naturally-occurring substances which cannot be safely assimilated by ecosystems or humans, such as heavy metals and carbon;
- Avoid contributing to the buildup in the environment of substances produced by society which cannot be safely assimilated by ecosystems or humans;
- Avoid ecosystem manipulation or resource use which undermines the ability of global, regional and local ecosystems to renew themselves;
- Dramatically increase the efficient use of natural resources so those resources are not further depleted;

- Shift to production models inspired by nature's ability to consume its own waste; and
- Use energy and other resources fairly and efficiently in order to meet basic human needs.

Applied together, these conditions guide activity in such a way as to protect future generations from environmental degradation and enhance the quality of our lives today. Ideally, designs and production systems would metabolize byproducts in a closed-loop system and use resources (energy and raw materials) at a rate equal to nature's ability to replenish. These concepts require product components to be either compostable or recyclable. Commercial and industrial products, including buildings, need to be designed for disassembly and to minimize or eliminate toxicity in order to accommodate these waste cycles. Some of the greatest design challenges in the 21st century will involve the system conditions.