

APPENDIX B

Pollution Prevention

Pollution Prevention: What You Can Do At Your Facility



Fact Sheet

WHAT IS POLLUTION PREVENTION?



Pollution prevention means eliminating or minimizing the initial generation of waste at the source, or utilizing environmentally sound on-site and off-site reuse or recycling. Waste treatment, release or disposal is not considered pollution prevention. Incinerating with energy recovery is also not considered pollution prevention.

Waste means any material, energy or other resource that is not incorporated into product. Examples include surplus, obsolete, off-specification, contaminated or unused material and includes air emissions, water discharges, hazardous waste and solid waste.

WHY IS POLLUTION PREVENTION IMPORTANT?

Michigan's businesses create two type of physical outputs: products and waste.

Products create revenues. Waste creates costs. Some of these costs follow.



Collection Costs

Maintenance personnel spend as much as 25 percent of their time collecting waste. Storing waste requires containers, compacting equipment and the use of valuable floor or dock space.

Transportation Costs

Waste must be transported from the generator to the treatment or disposal location.

These costs

usually include

rising energy costs. The costs of transporting



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800-662-9278

April 2004 • #9604



*This fact sheet replaces the following fact sheets:
Why Reduce Waste, Waste Reduction: Getting Started,
and Waste Reduction Overview*

AUTHORITY: PA 451 OF 1994 TOTAL COPIES: 3000
TOTAL COST: \$475.80 COST PER COPY: \$.16
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY



solid wastes off site have increased significantly in many areas as landfill closings have forced haulers to go to more distant facilities. The costs of transporting hazardous wastes off site are high due to necessary permits, licenses and vehicles and because there are few permitted hazardous waste treatment or disposal facilities. This often results in long hauling distances.

Treatment and Disposal Costs

Waste must frequently be treated to meet permit limitations before it can legally be discharged, emitted or be otherwise disposed.

Production Costs

Waste is a clear indicator of incomplete use of resources and inefficient use of labor. It means that raw materials are being bought, but not used in a product manufactured for sale. Good inventory control can minimize outdated and obsolete stock and equipment.

Worker Safety Costs

Handling any waste has the potential of exposing the worker to a health risk or other dangerous situation.



Hazardous material requires worker handling training and specialized equipment. Protection

of workers handling any type of waste can add costs.

Liability Costs

Businesses that create waste, particularly hazardous waste, are increasingly liable for environmental problems waste might cause. They are paying higher insurance and higher damage premiums. Even though disposal facilities are more closely regulated now than in the past, waste has the potential to add future, unexpected costs to a business if contamination requiring a cleanup occurs. Also, the generator has ultimate responsibility for the handling of any waste from generation point to disposal and beyond, including hauling, storage and making sure contracted services will handle the waste properly.



Lost Resource Costs

Much business waste is composed of materials that can be profitably reused or recycled. Throwing these resources away is often like throwing out a new source of revenues. It is common to find businesses discarding perfectly good items that they then buy "new" from someone else. **Example:** large manufacturing facilities have been known to dispose of reusable corrugated containers nearly identical to those purchased for packaging products at other points in the facilities. Good pollution

prevention practices will identify such opportunities for waste reduction and cost savings.



Storage Costs

Generated waste must be stored before disposal. Depending upon the degree of hazard, special permits, equipment and handling procedures may be necessary for storing waste. No matter what type of waste is generated, valuable facility space is necessary for storage.

Energy Costs

Good pollution prevention practice is good business and can reduce energy costs, including lighting and heating costs.

Maintenance and Cleanup Costs

Spills and leaks are an indication of poor housekeeping and wasted raw materials. The cleanup of spills and leaks can be costly. It can also reduce the useful life of machinery and equipment.



Hazardous Material Costs

Required permits and routine monitoring, frequent inspections, increased safety and

health concerns, protective equipment expenditures, high disposal and material costs, reporting and record keeping, spill reporting, potential fines, penalties, long-term liabilities and public concerns are all costs associated with using hazardous materials in your business. Material substitution and process and equipment modifications could lead to the complete elimination of, or major reductions in, the use of hazardous materials. Fewer hazards mean less costs for doing business

HOW DO I BEGIN?

Rethink the way you look at waste. Rethinking waste management means prioritizing reduction options to prevent waste.

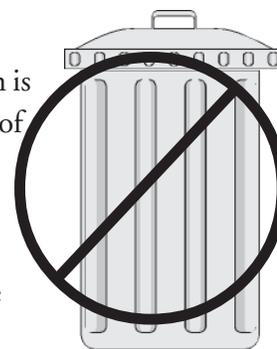


This shift in thinking from, “How do I get rid of it” to, “How do I prevent it” is at the top of the hierarchy for pollution prevention.

Reduce, Reuse and Recycle is still the slogan when thinking about pollution prevention. Using these three simple ideas you can address each waste stream. For example, if you see corrugated containers in your waste stream you may think of recycling as an option. Better yet, looking at your needs for these containers may help you address the problem at the source: Are the containers used by a supplier who could change to returnable, reusable containers? Is it possible to purchase materials in bulk so these packaging containers would not be required at all? Eliminating packaging altogether (source reduction) is the best option as long as product quality is maintained.

Reduce

Reduce the waste at the source. Source reduction is a philosophy or practice of not generating waste materials. Minimize the environmental and financial impact of waste by not creating it in the first place. Increase efficiency, substitute materials or change processes so that fewer waste materials are produced.



- **Renew your commitment to quality control.** Improving production efficiency will result in fewer rejected products and less waste. Improve worker training to reduce production of inferior products that are discarded as a waste. Improve inventory systems to reduce inventory needs and increase material handling efficiency. This can mean less waste because raw materials are kept from spoiling, warping or becoming obsolete. Faulty inputs can be sent back to suppliers providing a strong signal that quality counts.
- **Choose durable and repairable goods.** This extends equipment life and avoids creating discards. Negotiate service contracts. Practice regular maintenance.
- **Substitute inputs with less toxic and more recyclable materials.** Consider an alternative process such as substituting solvent-based with an aqueous-based parts cleaner.
- **Reduce input packaging.** Work with suppliers to reduce the amount of packaging that is sent to you by changing to bulk buying or eliminating unnecessary packaging. Insist that suppliers backhaul containers and packing materials.
- **Look for less wasteful procedures in all areas of the operation from the office to the plant floor and beyond.** Any place waste is generated has potential for pollution prevention.

• **Establish good housekeeping practices.**

Improving a business's housekeeping practices is often the easiest and least expensive way to reduce waste. Good housekeeping includes good inventory control and efficient operating procedures:



- 1) *Inspect materials when they are delivered and return rejected materials.*
- 2) *Keep storage and work areas clean and well organized, and label all storage containers.*
- 3) *Keep records of material use so you can measure reductions. Use the FIFO (First In, First Out) method of materials use. Mark the purchase date on items having limited shelf-life so that older materials are used before new ones are opened. Make this a priority assignment.*
- 4) *Repair all leaks to prevent any additional loss. Practice preventive maintenance.*
- 5) *Keep containers covered to prevent evaporation and spills.*
- 6) *Keep waste streams separate to increase their potential for reuse, recycling or treatment. Don't let a small amount of hazardous waste become a major problem by contaminating a larger amount of nonhazardous waste.*



Reuse

Reuse whenever possible. Each time a good is reused a new one is not manufactured, purchased or disposed. When designing or procuring products and packaging, consider the potential reuse of scrap, containers and other materials.

- **Recover and reuse cooling waters, used solvents, waste heat, plastic scrap, trimmings and other production materials to save money and materials.**

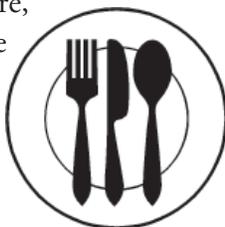
- **Work with suppliers to develop returnable containers and pallets.** Program implementation requires some up-front capitalization costs but you will save in disposal costs and your supplier will save on materials costs.



This may keep your raw material or “piece price” costs down in the long run.

- **Buy remanufactured goods.** Remanufacturing involves the restoration of worn-out products to a like-new condition. Discarded products are disassembled, usable parts cleaned and refurbished, and the product is reassembled from old and new parts. Those materials commonly targeted for remanufacture include automotive parts and industrial equipment. By purchasing remanufactured goods, you reuse products that might otherwise have been disposed and support an important remanufacturing industry.

- **Choose reusables over disposables.** Reusable napkins, dinnerware, placemats tablecloths, coffee mugs and condiment containers are common waste reduction items



for restaurants. In the office, use refillable pens and the second side of scrap paper for drafts, memos, scratch pads and telephone messages. Retailers can package sales in returnable or reusable containers. Manufacturers can reuse packing materials and pallets. Design products and systems for reuse.

Recycle

Recycle what’s left. The waste streams of most commercial and industrial establishments contain high percentages of homogeneous, recoverable materials. Recycling can reduce disposal costs and sometimes generate revenues. Metals and paper are two materials that have been recycled for decades with glass and plastic also being commonly reclaimed. The recycling market is now well-established with new markets opening continually. Materials targeted for recycling should be segregated from waste at the point of generation to lower contamination and increase their value. Recycling requires planning for collection, storage, handling and transport.

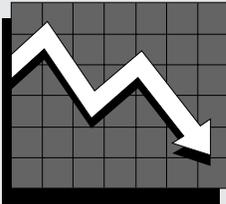


- **Recycle on-site.** Return scrap and industrial solvents and oils to processing or manufacturing operations on-site.
- **Recycle off-site.** Secure a hauler, broker or end-user prior to implementing collection. Plan for the amount of on site processing or treatment that will be required before the material would be accepted off site.
- **Investigate materials exchange options.** One company’s waste could be another’s raw material. Explore an informal materials exchange for liquid, solid and hazardous waste with other companies or use the services of an organized materials exchange.

STEPS FOR POLLUTION PREVENTION AT YOUR FACILITY

STEP 1:

Get top management commitment to pollution prevention policies and goals. Support and direction from top management are critical to the development of company-wide pollution prevention policies. Include a waste reduction hierarchy in your policy development. Examine all waste streams for source reduction, reuse and recycling potential.



STEP 2:

Establish pollution prevention goals. Zero waste is an ambitious goal but has been used by some businesses with amazing results.

STEP 3:

Communicate policies with employees. Involve all individuals who will be most affected by operation changes, including maintenance staff, materials handling personnel and purchasing employees. Seek their ideas and input. Reward innovative suggestions. Some organizations have permanent waste reduction or pollution prevention teams to continually look at ways to improve efficiency at their facility and prevent pollution.



STEP 4:

Communicate the policies with customers and suppliers.

STEP 5:

Develop a plan of action. Planning for pollution prevention begins with prioritizing waste streams on the basis of being regulated, level of hazard, toxicity, volume, cost, ability to segregate materials and ease of their elimination or reduction. As the plan is developed, an incremental approach to reduction may need to be adopted. By using an easy first target, your plan can build upon success. Include completion dates for achieving goals. A thorough waste audit or assessment is always important in order to characterize waste streams and determine volumes and source reduction or recycling potential of various materials. A waste audit or assessment could:

- *List department functions and personnel involved.*
- *Count trash and other waste containers.*
- *Look into containers to see what has been put in them.*
- *Calculate total waste generation by looking at all material inputs (mass balance).*
- *Obtain information on janitorial and trash disposal routines.*
- *Obtain information on state and local, solid and hazardous waste rules and regulations.*
- *Identify special waste handling needs.*
- *Discuss recycling options with facility waste haulers.*
- *Calculate the cost and benefits of your plan.*

STEPS FOR POLLUTION PREVENTION AT YOUR FACILITY



Other planning approaches could include targeting the highest volume, most hazardous, or costliest waste material. As waste streams are assessed for reduction potential, develop accounting systems that calculate the true cost of disposal and recognize benefits of pollution prevention. This means going beyond handling, transportation, treatment and disposal costs. Lost revenue of materials that could have been reused within the

facility or sold as recyclables should be included in accounting systems as well as the value of the wasted input material.

Don't overlook opportunities for reducing waste at the point of generation (source reduction). You can increase operating efficiency by substituting materials or changing processes so that fewer waste materials are produced. Examples of source reduction include replacing disposable materials with reusable and recyclable materials or switching to returnable containers.

STEP 6:

Broadcast the plan for implementation and its results. A company-wide memo describing pollution prevention goals will help kick off your program. Solicit employee involvement, especially if you are planning a program that will require widespread employee participation, such as an office paper collection program. Often, employee volunteers can serve as “waste basket watchdogs,” assisting with new employee orientation, distribution of collection containers and general trouble-shooting.



Employee involvement can be encouraged through the use of incentives. Employees might be offered the opportunity to suggest changes that can result in company savings. A portion of these savings could be passed back to the employee or to his or her department.



Employee education and participation is critical to program success. Those who must change how they handle materials will need guidelines and training. Provision must be made to continue these educational efforts into the future to anticipate personnel turnover and a regular re-emphasis of the importance the company places on the program.

Develop a weekly or monthly waste report to monitor the success of your pollution prevention program, provide employee feedback and identify problem areas.

POLLUTION PREVENTION PREPARES FOR THE FUTURE

The transition from a disposable to a waste-conscious economy, forced by the rapidly growing financial and environmental problems of waste, will have a profound effect on how goods are designed, produced, distributed, sold and used. It is costly to control and manage waste, regardless of whether it is hazardous or solid, air emissions or water discharges.

As the public learns more about the state of the environment, demands for recycling and for environmentally sound production methods and products will grow. Some businesses are responding to the opportunities of this trend. They are providing products with more recycled materials and fewer “virgin” materials and identifying these products with recycling symbols, creating an environmentally friendly image for themselves and their products.

The combination of escalating waste costs, increased environmental controls and changing public demands will make pollution prevention a competitive necessity.



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Waste Reduction/ Pollution Prevention Checklist and Glossary



Fact Sheet

Waste Reduction/Pollution Prevention Checklist and Glossary



While opportunities for reducing waste and preventing pollution are limitless, a few tried and true methods are presented here. Keep in mind that any waste or pollution created by your facility cuts into profits, reduces operation efficiency, may involve worker safety issues and could require regulatory involvement. Pollution prevention and waste reduction efforts can increase business profitability. Pollution and waste include everything from paper being thrown in the waste basket to air emissions going up the stack and discharges going to the local treatment facility.

The follow areas are covered in this fact sheet:

- Cafeterias and Restaurants
- Office Areas
- Cleaning and Degreasing Operations
- Production Lines
- Coating and Painting Operations
- Shipping and Receiving Areas
- Energy Conservation
- Water Use and Conservation
- Leak and Spill Prevention
- Maintenance and Storage Areas
- Material Handling

Choose the categories in this checklist that are most applicable to you; don't feel that you must do everything at once. Start with key areas of opportunity such as solvent recovery or corrugated cardboard recycling and go from there. As you implement these first ideas, you and your employees will identify more ideas. Your success is only limited by your willingness to try something different - and the payoff could be immense.



An automobile assembly plant targeted the elimination of its glycol ether through product substitution, process change and optimization. The result was approximately \$500,000 in savings related to material cost, lower emissions to air and water and reduced employee exposure.

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April 2004 • #9606

This fact sheet replaces #8905A (Waste Reduction Checklist) and #8914A (Waste Reduction Glossary)

AUTHORITY: PA 451 OF 1994 TOTAL COPIES: 1500
TOTAL COST: \$497.77 COST PER COPY: \$.33
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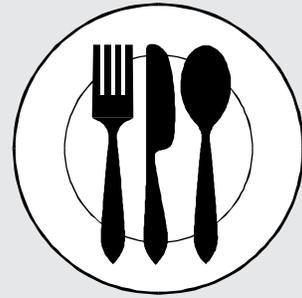


GENERAL WASTE REDUCTION TIPS

- ✘ Establish a company-wide commitment to preventing pollution as a part of doing business.
- ✘ Establish a pollution prevention hierarchy for your company. Typically, source reduction is the highest priority, followed by reuse and recycling.
- ✘ Establish a task force headed by an enthusiastic pollution prevention advocate.
- ✘ Develop goals with measurable objectives.
- ✘ Develop a budget, making sure that needed resources will be available.
- ✘ Design a management strategy to reduce waste, prioritize waste reduction options and then develop an implementation schedule.
- ✘ Identify and prioritize problem wastes; evaluate reduction potentials.
- ✘ Identify when and where waste is generated.
- ✘ Identify waste characteristics, including quantities of each material and how it is handled and disposed.
- ✘ Develop employee education programs on pollution prevention.
- ✘ Train employees in pollution prevention techniques.
- ✘ Develop an informal materials exchange with other companies.
- ✘ Use formal material exchange services.
- ✘ Rent or share equipment that is used only occasionally.

CAFETERIAS AND RESTAURANTS

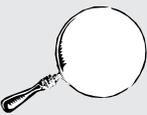
- Replace disposable items (cups, utensils, trays, dishes and single serving condiment containers) with reusable items.
- Buy in bulk to reduce container waste, but avoid buying too much of a product that might spoil.
- Donate extra food to feed the hungry and homeless. Check before you donate because these programs have guidelines for these donations.
- Encourage employees to bring their own containers or mugs to the company cafeteria. Make sure this complies with the health code governing cafeteria operations.
- Ask suppliers to provide products packaged in recyclable materials such as paper, glass, tin or aluminum.
- Evaluate waste for recycling or composting potential.
- Recycle corrugated cardboard, glass, metals, plastic and polystyrene.
- Compost kitchen scraps.
- Send grease to a renderer.

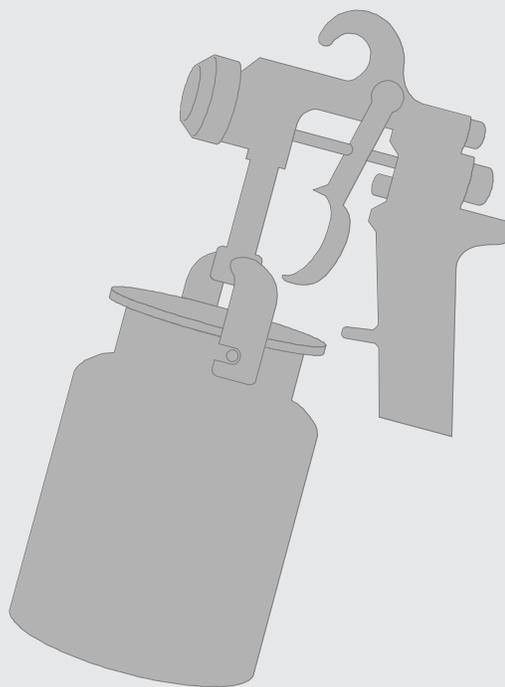


CLEANING AND DEGREASING OPERATIONS

- Use poly-pigs or other cleaning devices rather than chemicals to clean transfer lines.
- Use dry and nonsolvent cleaning procedures when feasible.
- Schedule production of the lightest color batch first so that cleaning rinses can be used for subsequent batches.
- Use countercurrent cleaning methods where possible (i.e., used solvent for initial cleaning and clean solvent for final cleaning).
- Dedicate process equipment to a single product, where feasible, to reduce the number of cleanups.
- Recover spent solvent for reuse and recycling.
- Cover cleaning tanks with an impervious material to prevent vapor loss.
- Centralize and consolidate cold cleaning operations to minimize vapor losses.
- Avoid cross-contamination of cleaners.
- Extend life of cleaners through filtration and replenishment.
- Increase drain times for parts before and after washing to reduce dragout.
- Remove sludge from cleaning tanks on a regular basis.
- Designate responsibility for coolant maintenance and replacement.
- Use coolants that have a long life.

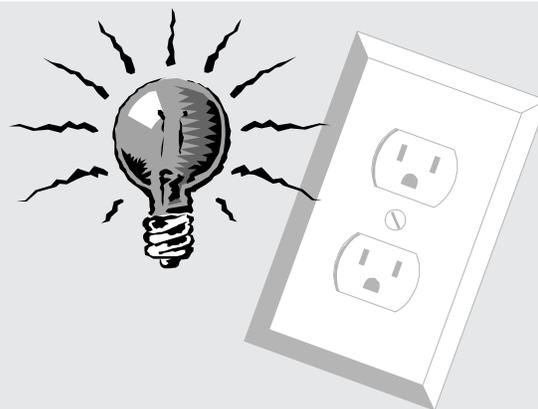
COATING AND PAINTING OPERATIONS

- Arrange for training of paint operators to minimize unacceptable quality and paint waste.
- Size paint batches systematically to specific jobs.
- Use equipment with high transfer efficiency (such as electrostatic applicators).
- Automate spray and dip operations where possible.
- Design filters properly to prolong filter life and minimize waste.
- Recycle overspray. 
- Evaluate the use of different types of paint arrestors such as water curtains and filters to determine least waste generation.
- Optimize spray speed, instance, angle, pressure and other conditions to reduce overspray.
- Regularly inspect production equipment - such as racks - for cleanliness. 
- Use water-based or high-solids coatings whenever possible.
- Routinely clean hooks to prevent paint buildup, that can interfere with painting operations.



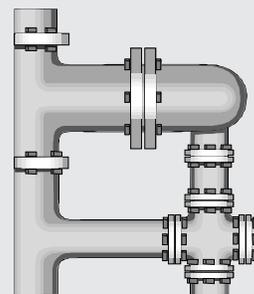
ENERGY CONSERVATION

- Replace lighting with energy efficient bulbs.
- Set up an energy audit for your facility and institute recommendations for energy efficiency.
- Turn off equipment when you finish using it. In most cases, this saves energy - but check manufacturer instructions to be sure.
- Manage information electronically. Not only will this reduce waste paper, but will reduce printer use, an energy intensive process.
- Stop copying. Along with printers, copiers are energy intensive.
- When replacing equipment, check for energy saving features and train employees in energy-wise practices.



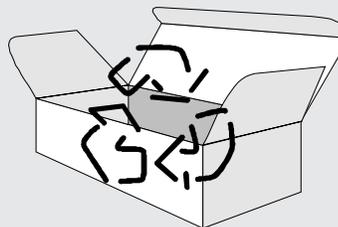
LEAK AND SPILL PREVENTION

- Capture and reclaim spilled or leaked materials.
- Routinely inspect and maintain valves, pipes, joints, pumps, tanks, etc. to prevent waste generation due to leaks and spills.
- Use seal-less pumps.
- Use oil-absorbent pads and reclaim both the pads and used oil instead of using granulated absorbents.
- Install spill basins or dikes in storage or material use areas.
- Install splash guards and drip boards on tanks and faucets.
- Install overflow control devices on process and storage tanks.
- Maximize use of welded pipe joints to prevent potential leak points.



MAINTENANCE AND STORAGE AREAS

- Use reusable containers that are collapsible, nestable or stackable for efficient storage and shipping.
- Segregate recyclable materials.
- Recycle cardboard, plastic, paper, glass, motor oil, metals and other materials.
- Identify storage needs for recyclables.
- Use compactors or balers to reduce the volume of recyclable materials. This conserves storage space, reduces transportation costs and increases marketability.



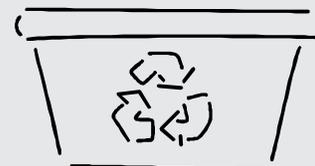
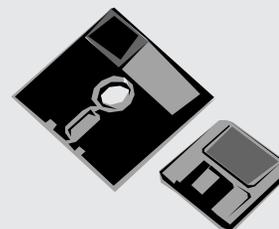
MATERIAL HANDLING

- Do not mix unlike materials except as required for production.
- Return empty containers to suppliers.
- Stack containers in accordance with manufacturers' recommendations to prevent collapsing from excessive weight or improper weight distribution.
- Receive materials in reusable and/or recyclable containers.
- Label all containers and process tanks properly to minimize contamination, especially for hazardous materials.
- Regularly look for ways to reduce or eliminate losses due to spoiled batches, out-of-date stock, spills and unused formulations.



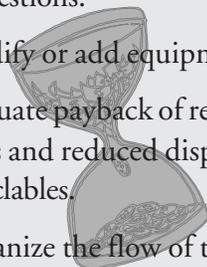
OFFICE AREAS

- Ask suppliers to reduce unnecessary packaging or packing materials.
- Use both sides of paper when copying documents.
- Use the back side of drafts for scrap paper.
- Use routing slips for reports, memos, magazines and other printed items to reduce the number of copies generated.
- Use electronic or physical bulletin boards for memos and announcements.
- Purchase only the quantity of supplies needed (especially letterhead, envelopes and business cards) to reduce the amount of outdated stock being thrown away.
- Investigate less toxic alternatives to common solvents used in the office, i.e., thinners, masking liquids, copy fluids, etc.
- Purchase reusable mugs for employees to eliminate disposable drinking cups.
- Maintain copiers, computers and other equipment to minimize scrap paper generation and to prolong the life of these machines. Negotiate service contracts.
- Give unneeded shipping boxes to employees to take home.
- Keep your mailing lists current to cut down on undeliverable and duplicate mailings that will be thrown away.
- Request removal of your company from unwanted mailing lists and when duplicate mailings are received.
- Store documents on disk to reduce paper and file space.
- Perform a “waste basket audit” to evaluate office recycling potential (usually necessary for office paper, newspaper, glass, corrugated cardboard and polystyrene dishware).
- Estimate office waste volume and composition. Call possible markets and speak with your waste handling contractor for recycling possibilities.
- Boost employee participation in office recycling programs with incentives and education.
- Provide “recycling baskets” instead of waste baskets for recyclable paper.
- Locate paper recycling containers near copiers, printers and other large paper generation points.
- Identify central storage capacities and container needs.
- Buy recycled office supplies when available.
- Return laser printer and copier toner cartridges to suppliers for recycling.



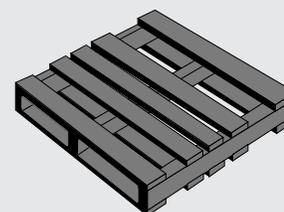
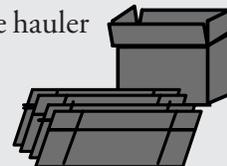
PRODUCTION LINES

- Substitute nonhazardous ingredients for hazardous material and biodegradable materials for persistent materials where possible.
- Mix only the volume of material required to fill an order.
- Recover oils, solvents and other cleaning materials for reuse and recycling.
- Perform regular maintenance to prevent leaks and prolong equipment life.
- Evaluate process performance to help determine efficiency; adjust as necessary to be certain waste and off-specification products are kept to a minimum.
- Purchase efficient equipment, train and motivate employees and install quality monitoring systems to reduce production line rejects.
- Separate recyclable materials from waste and implement a collection system for recoverable materials.
- Educate employees about source separation; encourage employee suggestions.
- Modify or add equipment to reuse or recycle scrap on site.
- Evaluate payback of recycling programs by considering reduced input costs and reduced disposal costs, and any profits made from the sale of recyclables.
- Organize the flow of the production line to minimize material handling.



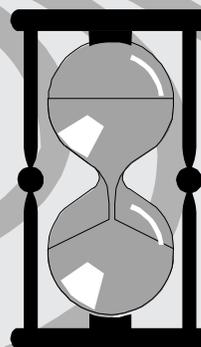
SHIPPING AND RECEIVING AREAS

- Reduce the generation of corrugated cardboard waste by working with suppliers to provide returnable and reusable containers.
- Distribute your products in returnable containers to reduce consumption of raw materials.
- Keep recoverable items such as corrugated cardboard containers separate from waste.
- Recycle corrugated cardboard and plastic; find a broker or consult your waste hauler for potential collection service.
- Compact or bale large quantities of cardboard or plastic.
- Share compactors and balers with neighboring businesses if you have small quantities of recyclables.
- Buy some items in bulk if it will reduce waste.
- Designate storage space for recyclables.
- Reuse and recycle pallets.
- Ask suppliers to provide packing materials that are returnable, reusable or recyclable.



WATER USE AND CONSERVATION

- Use high-pressure washing equipment to reduce the amount of waste water generated.
- Use a centrifuge or cyclone to remove paint solids from water arrestor holding tanks to reduce the need for water replacement.
- Measure water inflow and outflow rates from each unit process to assess water use.
- Reuse clean or contaminated water where possible.
- Segregate plating waste streams to allow metal recovery and to reduce treatment, chemical purchase costs and sludge handling costs.
- Use countercurrent rinsing techniques.
- Install drainboards and dragout tanks to recover dragout losses.
- Hold racks over plating tanks for a sufficient amount of time to minimize dragout.
- Use air knives or fog nozzles to reduce the volume of dragout losses.
- Equip rinse tanks with flow control valves.
- Agitate rinse baths (bubbling air or mechanical stirring) to reduce water consumption.
- Use timers and foot pedals to control water use.
- Use conductivity controllers on plating rinse tanks to control water use.
- Use metal recovery technologies (i.e., ion exchange, reverse osmosis, electrolysis) or evaporators to facilitate recycling and reuse of rinse waters.
- Use a centrifuge or filter press to dewater sludge and reduce disposal costs.



GLOSSARY OF POLLUTION PREVENTION/WASTE REDUCTION TERMS

Backhauling:

Working with a supplier or other hauler to take back packaging, containers or other material after delivery. This eliminates empty loads.

Baling:

Compressing and wrapping a material with wire, twine or string to form a unit that is easier to handle, store and transport.

Biodegradable Material:

A material that is broken down by bacteria into less complex, sometimes less hazardous chemical compounds or basic elements.

Brokers:

Agents or intermediary buyers who acquire scrap materials and bulk products from processors and recyclers and arrange delivery to the end users.

Collection Center:

A facility designed to accept reusable, recyclable or compostable materials from public or private sources.

Collector:

Companies that pick up or accept delivered materials from various local sources and sell accumulated quantities to brokers, processors and scrap materials consumers.

Compost:

Relatively stable, decomposed organic material.

Composting:

The controlled microbial degradation of organic waste to yield a humus-like product.

Computer Printout (CPO):

A paper grade: computer paper, white or white with green bars.

Contaminant:

Any material that has a deleterious effect on a product or the usability of a recyclable material. Too many contaminants may render materials useless for recovery.

Cullet:

Clean, color-sorted, crushed glass. Cullet is added to raw materials during glass-making since it can increase the rate of heat gain, thus reducing melting time and fuel costs.

Disposable Product:

Any product with an essential part that cannot be recycled, refilled or renewed.

Diversion Credits:

Fees paid by a municipal or other government to a recycler as compensation for avoiding costs of waste collection and disposal.

Dunnage:

Battens used to protect cargo and products during shipping.

File Stock:

A grade of paper waste, essentially consisting of mixed office papers. This grade is frequently recycled into tissue products.

Generator:

The producer of any type of waste or recoverable material.

Grade:

A classification of recyclable material based on its use, appearance, quality, manufacturing history, raw material or performance.

Hauler:

A waste collection company that offers complete refuse removal services. Many haulers now offer to serve as collectors of recyclables.

GLOSSARY (continued)

High-Grade Paper:

Relatively valuable types of office papers, such as computer paper, laser printout, white ledger and tab cards. White ledger includes most copy paper and letterhead.

Landfill:

An area of land in which deposits of waste are buried. Licensed landfills under Part 111 or Part 115 of Michigan Public Act 451 of 1994 may be one of the following types:

Type I: Designed for hazardous waste.

Type II: Designed for municipal solid waste.

Type III: Designed for construction and demolition debris and low hazard industrial waste.

Materials Recovery Facility (MRF):

A plant that processes or prepares recoverable materials for shipment to end-users. Incoming material can be commingled or source separated as recyclable, reusable and compostable materials. At some MRFs, materials are extracted from mixed waste (dirty MRF).

Mixed Paper:

Scrap paper of various grades, weights and colors. To be recyclable, limits must usually be placed on the inclusion of some types of paper.

Old Corrugated Containers (OCC):

A grade of paper, generally consisting of corrugated cardboard having a ruffled inner liner between two layers of kraft paper. Does not include liner-board or paperboard such as cereal boxes or clothing liners.

Old Newspaper (ONP):

A grade of newsprint, suitable for recycling into boxboard, paperboard and many construction and packing materials.

Paper Stock:

Scrap or waste papers that have been sorted and baled into specific grades.

Photodegradable:

A material that undergoes destruction of its chemical structure when exposed to light. Typically, the materials become brittle with time and fragment into small pieces or powder.

Pollution Prevention:

Eliminating or minimizing the initial generation of waste at the source, or utilizing environmentally sound on-site and off-site reuse or recycling. It applies to all waste or emissions released to the air, water and land and avoids cross media transfer of waste. Waste treatment, release or disposal is not considered pollution prevention.

Post-Consumer Waste

Products and packaging that have been discarded by household or business users; (printers' trimmings are not considered post-consumer by most standards).

Post-Industrial Waste:

Waste created in the manufacture of a product.

Processors:

Companies that convert secondary materials into a form more suitable for transportation or manufacture into new products.

GLOSSARY (continued)

Reclaimed Oil:

Used oil that has been cleaned of insoluble contaminants for use as an industrial grade lubricant or fuel.

Recoverable Materials:

Materials that can be separated from waste for reuse, recycling or composting. These may include production scrap, corrugated cardboard containers, office papers, pallets and many other materials.

Recovery:

Processes for recovering usable materials from wastes. Usable portions are isolated from unusable materials by mechanical or manual separation and chemical or thermal separation processes.

Recovery Rate:

The quantity of a waste recovered as a percentage of the total waste.

Recycling:

The collection, separation and recovery of useful materials that would otherwise be discarded as waste, for manufacture into raw materials or new products.

Re-refined Oil:

Waste oil that has been cleaned of insoluble and soluble contaminants to its original base oil condition before formulation with additives. Re-refined oil is also called lubricating base oil and suitable for fine grade lubrication.

Resource Recovery:

The extraction of discarded materials for use in the manufacture of new products or as a fuel or energy source. An “umbrella” term for recycling, composting, waste-to-energy and other alternatives to landfilling.

Retreading:

A process whereby a worn tread is removed and a new tread is placed on an undamaged tire casing.

Reuse:

Use of a product at least twice without changing its original form.

Scrap:

Discarded materials that can be economically recycled.

Scrap Consumers:

A company or “end-user” that receives scrap and processes it into usable products.

Scrap Tire:

A tire considered unroadworthy by virtue of worn tread or damaged carcass.

Secondary Production

The production of materials or products substantially from scrap.

Shredding:

Size reduction by shearing, tearing or chopping action.

Solid Waste:

Includes residential, commercial and industrial wastes. Does not include liquid or semiliquid hazardous wastes which are regulated under the Resource Conservation and Recovery Act (RCRA).

Source Separation:

The segregation of materials from a waste stream at the point of generation.

Source Reduction:

The philosophy or practice of not creating or generating waste materials by increasing efficiency, substituting materials or changing processes so that fewer waste materials are produced.

GLOSSARY (continued)

Used Oil:	O il that has been used and may or may not be suitable for recycling or re-refining.
Volume Reduction:	C ompaction or densification of waste or recoverable materials by baling, shredding and/or compaction.
Waste:	S urplus, obsolete, off-specification, contaminated or otherwise unneeded or unwanted material earmarked for disposal.
Waste Assessment or Audit:	A study to determine the source, composition, quantities and destinations of materials in a waste stream.
Waste Exchange:	A system for matching one company's "waste" with the raw material needs of another company.
Waste Management:	A dministration of the reduction, collection, separation, storage, transportation, transfer, processing, treatment and disposal of wastes.
Waste Reduction:	T he combined efforts of source reduction, reuse, recycling and composting practices.
Waste Paper Grade:	C lassifications of waste paper.
Waste Stream:	W aste from the point of generation to a final destination.
Waste-to-Energy Conversion (WTE):	T he incineration of wastes as a fuel to release energy rather than burying potential fuel in a landfill.
White Goods:	D iscarded refrigerators, stoves, washers, dryers and other appliances.
White Ledger:	W hite sulfite or sulfate ledger paper; includes copier paper, letterhead and white notebook paper.

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