Pollution Prevention Opportunities

Reducing waste and conserving energy can result in cost savings for businesses while still being beneficial to the environment. The following is a general worksheet designed to help Ohio EPA inspectors recognize opportunities for reducing waste and conserving energy at businesses they inspect.

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.
- ❑ Use accounting software, to help allocate environmental costs directly to products/processes producing them.

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, nest-able or stack-able 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.
- ❑ Raise drums off the floor to prevent corrosion from leaks or sweating concrete.

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Material Handling

- ❑ Practice “just-in -time” inventory control, which moves raw materials directly from the receiving dock to the manufacturing area for immediate use
- ❑ Computerize central inventory management.
- ❑ Use “first in, first out” policy for raw materials
- ❑ Store containers to allow visual inspection for corrosion/leaks.
- ❑ Do not mix unlike materials, except as required for production.
- ❑ Return empty containers to suppliers.
- ❑ Stack containers according to manufactures’ 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 formations.

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.
- ❑ 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 when 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.
- ❑ Located 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.
- ❑ Use cloth towels that can be laundered for re-use.

Production Lines

- ❑ Substitute nonhazardous ingredients for hazardous materials and biodegradable materials for persistent materials required to fill an order.
- ❑ Mix only the volume of materials 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.
- ❑ Install closed-loop recycling systems.
- ❑ Segregate waste by type to enhance their potential for re-use.

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.
- ❑ 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 arrester holding tanks to reduce the need for water replacement.
- ❑ Measure waster 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 counter current rinsing techniques.
- ❑ Install drainboards and drag out tanks to recover drag out losses.
- ❑ Hold racks over plating tanks for a sufficient amount of time to minimize drag out.
- ❑ Use air knives or fog nozzles to reduce drag out losses.
- ❑ Use wetting agents to reduce surface tension, thus minimizing drag out.
- ❑ 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.
- ❑ Use low temperature baths to reduce surface evaporation.

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Cleaning and Degreasing Operations

- ❑ Use poly-pigs or other cleaning devices rather than chemicals to clean transfer lines.
- ❑ Use dry and non-solvent cleaning procedures when feasible.
- ❑ Schedule production of the lightest color batch first so that cleaning rinses can be used for subsequent batches.
- ❑ Dedicate process equipment to a single product, where feasible, to reduce the number of cleanups.
- ❑ Recover spent solvents 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 drag out.
- ❑ Remove sludge from cleaning tanks regularly.
- ❑ Designate responsibility for coolant maintenance and replacement.
- ❑ Use Coolants that have a long life.
- ❑ Replace solvent -based cleaners with aqueous cleaning solutions or less toxic solvents (e.g., terpene, citric acid-based cleaners).
- ❑ Reclaim solvents through distillation.

Coating and Painting Operations

- ❑ Train 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 operation where possible.
- ❑ Design filters properly to prolong filter life and minimize waste.
- ❑ Recycle over-spray.
- ❑ 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 over spray.
- ❑ 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.
- ❑ Purchase a gun washer for cleaning spray guns and reusing paint thinner.
- ❑ Use cryogenic or plastic media blasting for paint stripping instead of solvent stripping

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.
- ❑ Manage information electronically.
- ❑ Stop copying
- ❑ When replacing equipment, check for energy saving features and train employees in energy-wise practices.
- ❑ Implement an inspection and repair program for compressed air lines.
- ❑ Place cool air intakes and air-conditioning units in cool shaded locations.
- ❑ Insulate hot water tanks and hot and cold water pipes.
- ❑ Install fans to bring heat down from high ceilings to work areas.