

FACT SHEET

California Department of Health Services
Toxic Substances Control Program
Alternative Technology Division

December 1989

Waste Reduction for Paint Formulators



Background

Paint formulators generate a variety of hazardous wastes in their operations. Tank cleaning is the principal source of waste generation. Common waste types include:

- solvents, used as carriers for resins and pigments and to clean production process equipment. Solvent distillation residues can contain solvents and, sometimes, toxic metals such as mercury, lead and chromium.
- obsolete stock
- customer returns
- off-specification products
- spills
- spent filter bags
- empty bags and packages

Paint formulators have a unique opportunity to reduce their waste generation without expensive capital investments because a large portion of the wastes from this industry contains essentially the same constituents as the raw materials and the products.

WASTE REDUCTION

Waste reduction can reduce the amount of hazardous wastes generated in your shop. This benefits you by reducing or minimizing:

- disposal costs
- regulatory compliance costs (recordkeeping, reporting, tracking, etc.)
- costs of future liabilities
- current operating costs (i.e., raw material costs)
- transportation costs
- offsite treatment costs
- worker safety costs

Also, both state (Health and Safety Code, Article 11.8, Section 25244.4) and federal (40 CFR, Part 262, Subpart D) regulations require that generators of hazardous waste file a Biennial Generator's report. Among other things, this report must include a description of the efforts undertaken, and the achievements accomplished, during the reporting period to reduce the volume and toxicity of waste generated.

California state law also permits the Department to request that generators of recyclable wastes provide a written statement to justify not recycling the waste (California Code of Regulations, Title 22, Article 12, Section 66763).

The Uniform Hazardous Waste Manifest requires that large generators certify that they "have a program in place to reduce the volume and toxicity of waste generated . . . determined to be economically practicable" and that they have selected the "practicable method of treatment, storage, or disposal currently available . . . which minimizes the present and future threat to human health and the environment". Small quantity generators must certify that they have made a "good faith effort to minimize . . . waste generation" and have selected the best affordable waste management method available.

Beginning Your Waste Reduction Program

The first requirement for a successful waste reduction program is **management commitment and support**. The plant owner or manager must be committed to reducing waste and must pass that commitment on to the employees. Every employee must be charged with the responsibility to identify and carry out waste reduction goals.

- Establish training programs for waste reduction, hazardous materials handling, and spill response.
- Establish incentive programs to encourage the design and use of new waste reduction ideas.

Assessing Your Waste Reduction Opportunities

Waste assessments are used to list the sources, types and amounts of hazardous waste generated in order to identify waste reduction opportunities. Information

gathered during the assessment process should answer the following questions:

- What types of hazardous wastes are generated? How much?
- Which wastes are hazardous and which are not?
- Which processes or operations do these waste streams come from? Specifically, look separately at the different processes associated with paint formulating: dispersion, let-down filtering and filling.
- What are the product types? Are they solvent or water-based?
- What are the relative production rates? Sales volumes?
- How much of a particular input material enters each waste stream?
- How much of a raw material can be accounted for through fugitive (i.e., unnoticed) losses?
- Are unnecessary wastes generated by mixing otherwise recyclable hazardous wastes with other process wastes?

These and other related questions can help you determine where to focus your waste reduction efforts.

Improve Shop Procedures

- **Good housekeeping** is the easiest and often the most inexpensive way to reduce waste. You will find that many of the suggestions here are really just common sense; simple measures can save you a lot of money.
- **Inventory control:** use a first in, first out policy for raw materials to prevent them from becoming too old to be used. A computerized inventory control system is sometimes the best way to implement this policy.
- Designate raw material and hazardous waste storage areas. Provide weather protection and spill containment. Keep areas clean and organized. Give one person the responsibility for maintaining the areas.
- Return obsolete raw materials to the supplier if possible.
- Separate waste streams for recycling and to keep non-hazardous material from becoming contaminated.

- Prevent and contain spills and leaks via proper equipment maintenance and increased employee training and supervision.
- Use spill cleanup methods that allow for recycling of spilled materials. If spilled materials cannot be reworked into product, use dry cleanup methods for spills.
- Purge pipelines before disconnecting when filling storage tanks.
- Avoid unnecessary equipment cleaning. Explore the feasibility of eliminating cleaning steps between batches. Disperse pigments only before a batch formulation to avoid unnecessary cleaning steps.
- Prevent paint from drying in the tanks.
- Light-to-dark batch sequencing can eliminate intermediate cleaning steps.
- Test raw materials before you accept them from the supplier. This can help eliminate the production of off-spec products.
- Store packages, etc. properly to prevent damage or contamination. Protect items stored outdoors from temperature extremes, rain and snow, wind, etc.

Substitute Materials

- Substitute water-based for solvent-based formulations whenever possible.
- Replace caustic equipment cleaning solutions with alkaline cleaning solutions.
- Substitute non-hazardous pigments to eliminate lead and chromium pigments.
- Use non-mercury bactericides (this works for solvent-based paints only; not currently applicable for water-based formulations).
- Use bag filters instead of cartridges.
- Reuse filter bags.
- Use wire screens instead of bags/cartridges.
- Product reformulation: high solids formulations can sometimes be used to reduce overall solvent consumption and waste generation.
- Use pigments in slurry form (reduces waste bags and packages).

Modify Processes

Equipment modifications:

- Use high pressure nozzles for cleaning.
- Install more efficient mills that would not require multi-pass dispersions (thus eliminating intermediate cleaning steps).
- Maximize equipment dedication.

Recycling and Resource Recovery

Increase Recyclability

- Maintain a minimum solvent content in the waste
- Segregate solvent wastes
- Use only one type of solvent if possible

Onsite Recycling

- Consider onsite distillation of solvents
- Reuse cleanup solvents
- Rework wastes into useful products
- Reuse filter bags

Offsite Recycling

- Explore waste exchange possibilities. The California Waste Exchange lists suppliers and potential buyers of recyclable wastes.

Other Waste Minimization Options

- To minimize spills during tank filling, install high level shutoff and flow totalizers with cutoff.
- Standardize your cleaning product. Use a solvent that is an ingredient of the final product so that it can be reworked.
- Segregate waste pigments so they can be reworked.
- Reduce traffic through raw materials storage area (reduces contamination, dispersal of materials).
- Implement a cost incentive program to encourage customers who purchase large volumes of drummed paint to convert to bulk purchase. This reduces the quantity of drums returned for cleaning, and also reduces residuals.

ADDITIONAL PUBLICATIONS / / / / /

Some additional publications that may be helpful are available from DHS-Alternative Technology Division:

The California Waste Exchange Directory (1988)

The California Waste Exchange Newsletter/Catalog (1988)

Waste Audit Study: Paint Manufacturing Industry (1987)

Third Biennial Report on Technology for Recycling and Treatment of Hazardous Wastes (1986)

Fourth Biennial Report: Economic Implications of Source Reduction, Recycling, Treatment and Disposal of Hazardous Wastes (1988)

Guide to Solvent Waste Reduction Alternatives—Final Report and Symposia (1986)

FURTHER INFORMATION / / / / /

For more information, contact the Technology Clearinghouse Unit in the Alternative Technology Division at:

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Toxic Substances Control Program
Alternative Technology Division
714/744 P Street
P.O. Box 9442732
Sacramento, CA 94234-7320 (916) 324-1807

For information about regulatory requirements, contact the DHS regional office nearest you:

Region 1	Sacramento	(916) 855-7700
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Region 3	Burbank	(818) 567-3000
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To get an EPA-CA ID number, call:

Department of Health Services-Toxics Division
Program Monitoring and Personnel Section
(916) 324-1781

STATE OF CALIFORNIA-HEALTH AND WELFARE

DEPARTMENT OF HEALTH SERVICES

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