

## Managing Waste Paint Booth Filters

In addition to providing a clean environment in which to paint, a spray booth protects workers and the environment. Spray booths with exhaust filters collect paint particles and dust, thus preventing them from polluting the air or being harmful to the operator’s respiratory system. Solvent vapors are directed up the stack away from employees, neighboring buildings and people.

### How Are They Regulated?

If spray-applied coatings contain any metals or metal compounds targeted under the federal Paint Stripping and Miscellaneous Surface Coating Operations regulation (aka: the 6H Rule), booth filters must be at least 98 percent efficient. Operators may use published booth filter efficiency data provided by vendors to show compliance with 6H. The five metals of concern are: cadmium, chromium, lead and nickel (regulatory level >.1% by mass) and manganese (regulatory level >1.0% by mass).

No matter which type of exhaust filter you use: fiberglass, paper, styrene, composite or some other type - all types of spent filters must be evaluated to determine whether or not they must be managed as hazardous waste. Evaluating filters can be done two ways: through “Knowledge of the Waste” or by Laboratory Testing.

**Knowledge of the Waste** - Using “knowledge” to make a hazardous waste determination for spent filters essentially involves assessing the coatings you use for the presence of certain metals and assuring that any metals in the waste do not exceed regulatory levels (see table). Written documentation to assist with this determination can include: Material Safety Data Sheets (MSDS), Technical Data Sheets or a written statement from the paint manufacturer stating that any metals in the paint are below these levels. A word of caution however: a MSDS is only required to show ingredients that make up more than one percent (1%) of the product or one-tenth (.1%) of a percent if the ingredient is a carcinogen. 1% is the same as 10000 milligrams/litre (mg/L); .1% equals 1000 milligrams/litre (mg/L). Therefore, when compared with the regulatory levels in the table, it is easy to see that metals not required to be shown on a MSDS could still result in a spent booth filter being regulated as hazardous waste. Because of this we recommend a onetime representative laboratory test of your booth filters.

Metal	Regulatory Level	EPA Waste
	<u>Mg/L</u>	<u>Code</u>
Arsenic	5.0	D004
Barium	100.0	D005
Cadmium	1.0	D006
Chromium	5.0	D007
Lead	5.0	D008
Mercury	0.2	D009
Selenium	1.0	D010
Silver	5.0	D011

**Laboratory Testing** – This involves taking a representative sample of your waste filters and having it analyzed to determine the presence of metals exceeding regulatory levels as shown in the table

above. The “toxicity characteristic leaching procedure” or TCLP test is commonly used for this purpose. However, a less costly alternative to the TCLP test for identifying the concentration of metals in a waste is called “total metals analysis”. Please call the DEC’s Waste Management and Prevention Division to better understand if this analysis is appropriate for your situation.

**Other Ways Spent Filters Might be Hazardous Waste** –Using a “F-listed” solvent for the purpose of cleaning equipment by spraying into booth filters will also cause filters to be regulated as hazardous waste. Commonly used f-listed solvents include toluene, xylene, acetone, methyl ethyl ketone and methanol or mixtures containing these solvents. If any of these “listed” solvents are ingredients in the paint (and not used for cleaning purposes), their use, as part of the paint formulation, will not result in paint wastes (including filters) being designated as hazardous waste. (Note: If your painting operations are subject to the 6H Rule, the cleaning of equipment by spraying where solvent is not contained and allowed to evaporate is prohibited. Regardless, this practice is discouraged as a source of air pollution and the use of an enclosed gun wash unit is strongly recommended.)

Finally, a spent booth filters could be regulated as hazardous waste if it exhibits the characteristic of “**ignitability**”. In this case, the filter would be “capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burn so vigorously and persistently” that a hazard is created. Most modern autobody finishes in use today would not render a filter ignitable under this definition. If used filters are thoroughly dry at the time of replacement, solvents will have either evaporated or become part of the polymerized coating.

### **Best Management Practices**

- ✓ Store filters in a way that will protect them from dust and damage prior to use;
- ✓ Use correct filter for the type of paint, equipment and booth you use;
- ✓ Use correct air volume and velocity;
- ✓ Minimize overspray - adjust equipment to ensure proper fan pattern and operating pressure;
- ✓ Filters do not remove vapors from shop exhausts. While the spray booth works to remove harmful solvent vapors from inside the shop, most exhaust filters do NOT remove these solvent vapors or volatile organic compounds (VOC) from the exhaust emitted into the air from the shop. Consider switching to waterborne paint products to reduce VOCs.

### **Paint Booth Stack Design**

Paint booth stacks should discharge vertically above the roofline of the building. Horizontal discharges are not recommended. The height of the stack discharge must be sufficient to avoid the exhaust being circulated adjacent to the building due to building downwash effects or drawn into nearby building intakes. A height of four feet above the roof peak is an absolute minimum.

However, site conditions may warrant a higher stack if buildings are located nearby which are above the discharge. The stack must not be equipped with any device that would impede the upward discharge of the exhaust air (i.e. rain caps). Other techniques may be employed to minimize the entry of water and snow into the exhaust system, (i.e. butterfly caps or stack sleeves).