

## EMISSIONS ACTIVITY CATEGORY FORM SOLVENT METAL CLEANING

*This form is to be completed for each piece of equipment or operations that uses solvents to clean metal parts. State/Federal regulations which may apply to solvent metal cleaning are listed in the instructions. Note that there may be other regulations which apply to this emissions unit which are not included in this list.*

1. Reason this form is being submitted (Check one)

- New Permit       Renewal or Modification of Air Permit Number(s) (e.g. L001)\_\_\_\_\_

2. Maximum Operating Schedule: \_\_\_\_\_ hours per day; \_\_\_\_\_ days per year

If the schedule is less than 24 hours/day or 365 days/year, what limits the schedule to less than maximum? See instructions for examples. \_\_\_\_\_

3. The following type of equipment is used for cleaning and removing soils from metal surfaces (check one):

- Cold Cleaner (Manual or batch loaded process which uses solvent maintained below its boiling point.)  
(Complete questions 1 through 15)
- Open top vapor degreaser (Batch loaded process which uses vaporized solvent for cleaning.)  
(Complete questions 1 through 8 and 16 through 21)
- Conveyorized degreaser (Continuously loaded conveyorized process which uses either vaporized solvent or liquid solvent for cleaning (vapor or liquid in a container).)  
(Complete questions 1 through 8 and 22 through 28)

4. Describe the type of metal parts or products cleaned with this equipment or operation:

\_\_\_\_\_

5. Complete the following table for all solvents used:

Solvent	Maximum Gallons Used Throughout Year	Solvent Vapor Pressure (psia @ 100 °F)	Solvent Density (lb/gal)

6. Minimum amount of solvent waste disposed of throughout the year: \_\_\_\_\_ gallons
7. Average solvent content of solvent waste: \_\_\_\_\_ percent by volume
8. Method of solvent waste disposal (check one or more):
- |  |  |
|--|--|
| <input type="checkbox"/> Industrial waste collection service   | <input type="checkbox"/> Reclamation service which collects, distills and returns the reclaimed portion of waste solvent to the user |
| <input type="checkbox"/> In-house reclamation with distillation unit, with capacity of _____ gallons | <input type="checkbox"/> Waste solvent disposal facility (e.g., landfill, incineration, etc.)  |
| <input type="checkbox"/> Deep well injection   | <input type="checkbox"/> Other, specify _____  |

**COLD CLEANER INFORMATION**

9. Equipment Manufacturer: \_\_\_\_\_ Model No. \_\_\_\_\_
10. Is this cold cleaner equipped with a cover?  Yes  No
- Is this cover easily operated with one hand?  Yes  No
11. Cold cleaner has (check one or more):
- |   |  |
|---|--|
| <input type="checkbox"/> None of the below  | <input type="checkbox"/> Water cover   |
| <input type="checkbox"/> Refrigerated chiller; Maximum operating temperature: _____°F | <input type="checkbox"/> Carbon adsorption (must complete Question 29)               |
|   | <input type="checkbox"/> Other system for reducing solvent emissions, specify: _____ |
12. Solvent is:  Sprayed  Heated, temperature: \_\_\_\_\_°F
- Agitated by:  Use of pumping  Compressed air  Vertical Motion
- Ultrasonics  None of the above
13. Describe the method for draining excess solvent off cleaned parts:
- \_\_\_\_\_

14. Describe cold cleaner design (check one):

Solvent tank with capacity and dimensions of:

Length \_\_\_\_\_ in. Width \_\_\_\_\_ in. Height \_\_\_\_\_ in. Capacity \_\_\_\_\_ gallons

Sink-like work area where solvent is pumped through a nozzle and drains back to a solvent reservoir (sump)

Dimensions of sink drain: \_\_\_\_\_ Round, diameter \_\_\_\_\_ in.  
\_\_\_\_\_ Square/rectangular, \_\_\_\_\_ in. X \_\_\_\_\_ in.

Other, describe \_\_\_\_\_

15. Freeboard information

Height (distance from solvent fill line to the top lip of the tank): \_\_\_\_\_ in.  
Width (width, not length, at the solvent surface): \_\_\_\_\_ in.  
Freeboard Ratio (height/width): \_\_\_\_\_

### OPEN TOP VAPOR DEGREASER INFORMATION

16. Equipment Manufacturer: \_\_\_\_\_ Model No. \_\_\_\_\_

17. Is the vapor degreaser equipped with a cover?  Yes  No

Is the cover powered?  Yes  No

Are there any fixed spray nozzles?  Yes  No

18. Dimensions of top opening:

Length: \_\_\_\_\_ in. Width: \_\_\_\_\_ in.

19. Freeboard information

Height (distance from the midpoint of the primary condenser coils to the top edge of the tank): \_\_\_\_\_ in.  
Width (width, not length, at the top of the vapor zone): \_\_\_\_\_ in.  
Freeboard Ratio (height/width): \_\_\_\_\_

20. Open top degreaser has (check one or more):

- None of the below
- Refrigerated freeboard chiller, operating temperature \_\_\_\_\_ °F
- Refrigerated condenser coil, operating temperature \_\_\_\_\_ °F
- Enclosed design in which the cover or door opens only when the part is actually entering or exiting the degreaser
- Carbon adsorption system (must complete Question 29)
- Other control system, excluding condenser coils and freeboard water jacket, which reduces solvent emissions. Specify system and percent control efficiency: \_\_\_\_\_

21. Identify safety switches that are installed and operating (check one or more):
- None of the below
  - Condenser flow switch and thermostat which shuts off the sump heat if the condenser coolant is either not circulating or too warm.
  - Device, other than a condenser flow switch and thermostat, which shuts off the sump heat if the condenser coolant is either not circulating or too warm. Specify: \_\_\_\_\_  
\_\_\_\_\_
  - Spray safety switch shuts off the spray pump if the vapor level drops below any fixed spray nozzle.
  - Vapor level control thermostat which shuts off the sump heat when vapor level rises too high.
  - Device, other than a vapor level control thermostat, which shuts off the sump heat when the vapor level rises too high. Specify: \_\_\_\_\_  
\_\_\_\_\_

**CONVEYORIZED DEGREASER INFORMATION**

22. Equipment Manufacturer: \_\_\_\_\_ Model No. \_\_\_\_\_
23. Is this conveyORIZED degreaser a vapor degreaser?
- Yes      If yes, are there any fixed spray nozzles?       Yes     No
- No      If no, provide the maximum operating temperature of the solvent: \_\_\_\_\_°F
24. Is this conveyORIZED degreaser equipped with downtime covers?
- Yes       No
25. ConveyORIZED degreaser is equipped with the following equipment for preventing cleaned parts from carrying out solvent liquid or vapor:
- None
  - Rotating Basket
  - Drying Tunnel
  - Other, specify: \_\_\_\_\_  
\_\_\_\_\_

26. Air/solvent interface area is: \_\_\_\_\_ sq. ft.

Provide calculations below: (See instructions)

Dimensions of vapor zone or solvent surface: Length: \_\_\_\_\_ Width: \_\_\_\_\_  
*Air/solvent interface area = length x width*

27. Identify safety switches that are installed and operating (check one or more):

- None of the below
- Condenser flow switch and thermostat which shuts off the sump heat if the condenser coolant is either not circulating or too warm.
- Device, other than a condenser flow switch and thermostat, which shuts off the sump heat if the condenser coolant is either not circulating or too warm.  
Specify: \_\_\_\_\_
- Spray safety switch which shuts off the spray pump if the vapor level drops below any fixed spray nozzle.
- Vapor level control thermostat which shuts off the sump heat when vapor level rises too high.
- Device, other than a vapor level control thermostat, which shuts off the sump heat when the vapor level rises too high.  
Specify: \_\_\_\_\_

28. ConveyORIZED degreaser has (check one or more):

- None of the below
- Refrigerated freeboard chiller
- Refrigerated condenser coils
- Carbon adsorption system (must complete Question
- Other control system, excluding condenser coils and freeboard water jacket, which reduces solvent emissions. Describe system and specify minimum % control efficiency:  
\_\_\_\_\_  
\_\_\_\_\_

**CARBON ADSORPTION SYSTEM** (See Instructions)

29. Identify carbon adsorption systems and complete the following table:

Carbon Adsorption System	Ventilation Rate with Covers Open (acfm)	Emissions Rate Averaged Over One Complete Adsorption Cycle (ppmv solvent)

# INSTRUCTIONS FOR COMPLETION OF THE EMISSIONS ACTIVITY CATEGORY FORM FOR SOLVENT METAL CLEANING

## **GENERAL INSTRUCTIONS:**

Provide complete responses to all applicable questions. If an item does not apply to the emissions unit, write in "Not Applicable" or "NA." If the answer is not known, write in "Not Known" or "NK." If you need assistance in understanding a question after reading the instructions below, contact your Ohio EPA District Office or Local Air Agency for assistance. Submittal of an incomplete application will delay application review and processing. In addition, the application may be returned as incomplete if all applicable questions are not answered appropriately.

## **APPLICABLE REGULATIONS:**

*The following State and Federal Regulations may be applicable to solvent metal cleaning. Note that there may be other regulations which apply to this emissions unit which are not included in this list.*

Federal: 40 CFR 63, (NESHAPS/MACT) Subpart A (General Provisions), Subpart T (Halogenated Solvent Cleaning).

State: OAC rule 3745-31-02 (Permit to Install)  
OAC rule 3745-35-02 (Permit to Operate)  
OAC rule 3745-21-09 (O) Control of emissions of volatile organic compounds from stationary sources - Solvent metal cleaning  
OAC rule 3745-21-10 - Compliance test methods and procedures

If you would like a copy of these regulations, contact your Ohio EPA District Office or Local Air Agency. State regulations may also be viewed and downloaded from the Ohio EPA website at <http://www.epa.state.oh.us/dapc/regs/regs.html>. Federal regulations may be viewed and downloaded at <http://www.epa.gov/docs/epacfr40/chapt-I.info/subch-C.htm>.

## **CALCULATING EMISSIONS:**

Manufacturers of some types of emissions units and most types of control equipment develop emissions estimates or have stack test data which you can request. Stack testing of the emissions may be done. Emissions unit sampling test data may be either for this emissions unit or a similar one located at the facility or elsewhere. You may develop your own emission factors by mass balance or other knowledge of your process, if you can quantify inputs and outputs accurately. You may be able to do this on a small scale or over a short period of time, if it is not practical during regular production. If you have control equipment, you may be able to quantify the amount of pollutants collected over a known time period or production amount. Any emission factor calculation should include a reference to the origin of the emission factor or control efficiency.

Solvent metal cleaning operations typically emit solvent vapors to the air. Emissions due to solvent evaporation can be calculated by multiplying the annual amount (in gallons) of solvent used by the solvent weight per gallon:

$$\text{Annual emissions (lbs/yr)} = \text{amount of solvent used* (gallons/yr)} \times \text{weight per gallon (lbs/gal.)}$$

\*Usage equals beginning inventory, minus final inventory, plus purchases, minus credits for documented disposal or returns to suppliers.

## **SPECIFIC INSTRUCTIONS:**

1. Indicate whether this is an application for a new permit or an application for permit renewal. If applying for a permit renewal, provide the 4-character OEPA emissions unit identification number.
2. Provide the maximum number of hours per day and days per year the solvent metal cleaning operation is expected to operate. The following are examples of why the maximum number of hours per day may be less than 24 or the maximum number of days per year may be less than 365 (this list is not all-inclusive):
  - The facility can only operate during daylight hours.
  - The process can only operate within a certain range of ambient temperatures.
  - The process is limited by another operation (i.e., a bottleneck).
3. Check the type of solvent metal cleaning equipment installed or to be installed at the facility. For further information, see the definitions of these terms in OAC rule 3745-21-01(G).
4. Describe the specific metal parts or products cleaned in this solvent cleaning operation. Use multiple lines for different parts or products.
5. Identify the types of solvents used by this unit, the maximum quantities of solvents to be employed by the unit in one year, the vapor pressure for each solvent in pounds per square inch, absolute, at 100 degrees Fahrenheit and the solvent density in pounds per gallon. Solvent vapor pressure and density can usually be found on the Material Safety Data Sheet (MSDS). Consult your solvent supplier for additional details.

Note that the column entitled "Maximum Gallons Used Throughout Year" represents total solvent to be used, but will not necessarily be the amount of solvent emitted since recovered solvent is identified below and will be subtracted from the total.

6. Enter the lowest amount of solvent which is to be recovered and disposed of during the year, in gallons.
7. Enter the average percent by volume of the solvent content of the solvent waste.
8. Select the box(es) that indicate where solvent wastes are to be disposed.
9. Enter manufacturer and model number information for the cold cleaner.
10. Indicate "Yes" if the cold cleaner has a cover and "No" if it does not have a cover. If the cold cleaner has a cover, indicate "Yes" if the cold cleaner's cover is easily operated with one hand and "No" if the cleaner's cover cannot be easily operated with one hand.
11. Check the appropriate boxes to indicate what emissions control systems are employed for the cold cleaner. Provide any additional information if requested for any emission control selection.
12. Select the box(es) that indicate the method(s) used for parts/products cleaning.
13. Explain in the space provided how solvent is drained from the parts/products after they have been cleaned.

14. Enter the length (longer horizontal measurement), height (vertical measurement), and width (shorter horizontal measurement), in inches, of the inside of the cold cleaner. Provide the maximum solvent holding capacity, in gallons, of the cold cleaner.
15. Enter the height, width and freeboard ratio, as described in the form. The freeboard ratio is computed by dividing the height by the width. The same units of measurement must be used for all dimensions.
16. Enter manufacturer and model number information for the open top vapor degreaser.
17. Enter "Yes" if the vapor degreaser has a cover and "No" if it does not have a cover. If the degreaser has a cover, indicate "Yes" if the cover is powered and "No" if it is manually operated.
18. Enter the length (longer horizontal measurement) and width (shorter horizontal measurement), in inches, of the inside of the top of the vapor degreaser. Indicate "Yes" or "No" to answer the question of whether the vapor degreaser is equipped with fixed spray nozzles.
19. Provide the height and width, in inches, and freeboard ratio of the vapor degreaser. The freeboard ratio is computed by dividing the height (in inches) by the width (in inches).
20. Check the appropriate box(es) to identify the emissions control systems serving the vapor degreaser. Provide any additional information if requested for any emissions control selection.
21. Check the appropriate box(es) to identify the safety switches that are employed in the vapor degreaser.
22. Enter manufacturer and model number information for the conveyORIZED degreaser.
23. Check "Yes" if the conveyORIZED degreaser employs a solvent in the vapor state and indicate whether or not any fixed spray nozzles are used. Check "No" if the conveyORIZED degreaser employs solvent in the liquid state and indicate the highest temperature of the solvent under normal operation.
24. Check "Yes" if the conveyORIZED degreaser is equipped with downtime covers. Check "No" if the conveyORIZED degreaser is not equipped with downtime covers.
25. Check the box(es) that identify what equipment is employed at the conveyORIZED degreaser to help drain parts and/or minimize solvent liquid or vapor carry out from cleaned parts removal.
26. Provide the air/solvent interface area in square feet. This is the area of the region where ambient air contacts solvent in the conveyORIZED degreaser. Show the dimensions of the vapor zone or the solvent surface, in inches, in the space provided. The air/solvent interface area is calculated as follows:  
$$\text{Air/solvent interface (sq. ft.)} = [ \text{Length (inches)} \times \text{Width (inches)} ] / 144$$
27. Check the box(es) to identify the type(s) of safety switches are employed in the conveyORIZED degreaser.
28. Check the box(es) to identify the emissions control equipment that is employed to keep solvent from escaping from the unit.
29. Identify any carbon adsorption systems that are employed to control emissions from the

conveyorized degreaser. Provide the air ventilation rate, in actual cubic feet per minute, that occurs when the covers of the unit are open. Also, enter the emissions rate of solvent, in parts per million (by volume), calculated as a time-weighted average from the beginning of the adsorption cycle until the beginning of the next cycle.

### **OPERATION AND MAINTENANCE REQUIREMENTS, Additional Information**

Owners and operators of solvent metal cleaning machines which do not use methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, and chloroform shall operate and maintain such units in accordance with the following practices to minimize solvent evaporation: (See note below)

#### **Cold Cleaners, per OAC 3745-21-09(O)(2):**

1. Provide a permanent, legible, conspicuous label, summarizing the operating requirements.
2. Store waste solvent in covered containers.
3. Close the cover whenever parts are not being handled in the cleaner.
4. Drain the cleaned parts until dripping ceases.
5. If used, supply a solvent spray that is a solid fluid stream (not a fine, atomized, or shower-type spray) at a pressure that does not exceed ten pounds per square inch gauge.)
6. Clean only materials that are neither porous nor absorbent.

#### **Open Top Vapor Degreasing Machine, per OAC 3745-21-09(O)(3):**

1. Keep the cover closed at all times except when processing work loads through the machine.
2. Minimize solvent carryout by:
  - a. Racking parts so that solvent drains freely and is not trapped.
  - b. Moving parts in and out of the machine at less than eleven feet per minute.
  - c. Holding the parts in the vapor zone at least thirty seconds or until condensation ceases, whichever is longer.
  - d. Tipping out any pools of solvent on the cleaned parts before removal from the vapor zone.
  - e. Allowing parts to dry within the machine for at least fifteen seconds or until visually dry, whichever is longer.
3. Clean only materials that are neither porous nor absorbent.
4. Occupy no more than one-half of the machine's open-top area with a workload.
5. Always spray within the vapor level.
6. Repair solvent leaks immediately, or shut down the machine.
7. Store waste solvent only in covered containers.
8. Operate the cleaner such that water cannot be visually detected in solvent exiting the water separator.
9. Use no ventilation fans near the machine opening.
10. When the cover is open, do not expose the open top to drafts greater than 131 feet/minute, as measured between three and six feet upwind and at the same elevation as the tank lip.
11. If a lip exhaust is used on the machine, do not use a ventilation rate that exceeds sixty five cubic feet/minute/square foot of machine open area, unless a higher rate is necessary to meet occupational safety and health requirements.
12. Provide a permanent, conspicuous label, summarizing the operating requirements.

#### **Conveyorized Degreasing Machine, per OAC 3745-21-09(O)(4):**

1. Use no workplace fans near the degreaser opening, and ensure that exhaust ventilation does not exceed sixty-five cubic feet/minute/square foot of degreaser opening, unless a higher rate is necessary to meet occupational safety and health administration requirements.

2. Minimize openings during operation so that entrances and exits silhouette workloads with an average clearance between the parts and the edge of the degreaser opening of less than ten per cent of the width of the opening.
3. Provide downtime covers for closing off the entrance and exit during shutdown hours.
4. Minimize solvent carryout emission by:
  - a. Racking parts so that solvent drains freely from parts and is not trapped.
  - b. Maintaining the vertical conveyor speed at less than eleven feet per minute.
5. Store waste solvent only in covered containers.
6. Repair solvent leaks immediately, or shut down the machine.
7. Operate the cleaner such that water cannot be visually detected in solvent exiting the water separator.
8. Place downtime covers over entrances and exits of the conveyorized degreaser at all times when the conveyors and exhausts are not being operated.
9. Clean only materials that are neither porous nor absorbent.

### **RECORD KEEPING REQUIREMENTS, Additional Information**

Any owner or operator of a solvent metal cleaning operation shall maintain records of the following information in a readily accessible location for at least five years and shall make these records available to the director upon verbal or written request:

1. All control equipment maintenance such as replacement of the carbon in a carbon adsorption unit.
2. The results of all emissions tests conducted on open top vapor or conveyorized degreasing machines to demonstrate compliance with ventilation or control system requirements.
3. For cold cleaners, the types of solvents employed and the vapor pressure of each solvent (pounds per square inch absolute) measured at one hundred degrees Fahrenheit.

**Note: Solvent cleaning machines which employ methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, and chloroform are subject to 40 CFR Part 63, Subpart T - Halogenated Solvent Cleaning. See "Applicable Regulations" section for more information.**