Potential to Emit

DEGREASING OPERATIONS CALCULATION WORKSHEET

This worksheet can be used to calculate VOC and HAP emissions from cold cleaners and degreasers that use a non-halogenated cleaning solvent. If you are using a halogenated cleaning solvent and are subject to the Halogenated Solvent Cleaning NESHAP (40 CFR Part 63, Subpart T), use the equation in 40 CFR 63.465(e) to calculate potential to emit.

Company Name:	Name of Person completing form:

Degreaser Information

Description:

Degreaser Type (check one):

☐ Cold Cleaner ☐ Open Top Vapor ☐ Conveyorized, Vapor ☐ Conveyorized, non boiling

Name of solvent used:

Ingredients (In the fields below list the name of each VOC contained in the solvent, enter the CAS number, check if the compound is a HAP, and enter the weight percent):

Compound	CAS Number	HAP?	Wt %
1.		☐	%
2.		☐	%
3.		☐	%
	Total Wt% VOCs		%
	Total Wt% HAPs		%

Choose one of the following tables to calculate the potential to emit VOCs and HAPs. If more than one HAP is present in the solvent, you will need to calculate the PTE for each HAP and for total HAPs.

Cold Cleaner - Potential to Emit

A. Total Surface area of all cold cleaner(s): **ft^2**	B. Control Efficiency (See Table 1 on Page 3): **%**

C. Emission Rate
(A) x (0.08 lb/hr/ft^2) = **lb/hr**

D. Potential to Emit VOCs
(C) x (wt% VOCs/100) x (8,760 hrs/yr) x (100 – [B])/100) x (1 ton/2,000 lbs) = **Tons VOC/yr**

E. Potential to Emit HAP1:
(C) x (wt% HAP1/100) x (8,760 hrs/yr) x (100 – [B])/100) x (1 ton/2,000 lbs) = **Tons HAP1/yr**

F. Potential to Emit HAP2 (if more than one HAP):
(C) x (wt% HAP2/100) x (8,760 hrs/yr) x (100 – [B])/100) x (1 ton/2,000 lbs) = **Tons HAP2/yr**

G. Potential to Emit HAP3 (if more than one HAP):
(C) x (wt% HAP3/100) x (8,760 hrs/yr) x (100 – [B])/100) x (1 ton/2,000 lbs) = **Tons HAP3/yr**

H. Potential to Emit Total HAPs (if more than one HAP):
(E) + (F) + (G) = **Tons HAPs/yr**

Open Top Vapor Degreaser - Potential to Emit

A. Total Surface area of all cold cleaners : **ft^2**	B. Control Efficiency (See Table 1 on Page 3): **%**

C. Emission Rate
(A) x (0.15 lb/hr/ft^2) = **lb/hr**

D. Potential to Emit VOCs
(C) x (wt% VOCs/100) x (8,760 hrs/yr) x (100 – [B])/100x (1 ton/2,000 lbs)) = **Tons VOC/yr**

E. Potential to Emit HAP1:
(C) x (wt% HAP1/100) x (8,760 hrs/yr) x (100 – [B])/100) x (1 ton/2,000 lbs) = **Tons HAP1/yr**

F. Potential to Emit HAP2 (if more than one HAP):
(C) x (wt% HAP2/100) x (8,760 hrs/yr) x (100 – [B])/100) x (1 ton/2,000 lbs) = **Tons HAP2/yr**

G. Potential to Emit HAP3 (if more than one HAP):
(C) x (wt% HAP3/100) x (8,760 hrs/yr) x (100 – [B])/100) x (1 ton/2,000 lbs) = **Tons HAP3/yr**

H. Potential to Emit Total HAPs (if more than one HAP):
(E) + (F) + (G) = **Tons HAPs/yr**

Conveyorized Vapor Degreaser - Potential to Emit

A. Number of Conveyorized Vapor Degreasers:	B. Control Efficiency (See Table 1 on Page 3): **%**

C. Potential to Emit VOCs:
(A) x (wt% VOCs/100) x (26 tons/yr) x (100 – [B])/100) = **Tons VOC/yr**

D. Potential to Emit HAP1:
(A) x (wt% HAP1/100) x (26 tons/yr) x (100 – [B])/100) = **Tons HAP1/yr**

E. Potential to Emit HAP2 (if more than one HAP):
(A) x (wt% HAP2/100) x (26 tons/yr) x (100 – [B])/100) = **Tons HAP2/yr**

F. Potential to Emit HAP3 (if more than one HAP):
(A) x (wt% HAP3/100) x (26 tons/yr) x (100 – [B])/100) = **Tons HAP3/yr**

G. Potential to Emit Total HAPs (if more than one HAP):
(D) + (E) + (F) = **Tons HAPs/yr**

Conveyorized Vapor Degreaser, Non-boiling - Potential to Emit

A. Number of Conveyorized Vapor Degreasers:	B. Control Efficiency (See Table 1 on Page 3): **%**

C. Potential to Emit VOCs:
(A) x (wt% VOCs/100) x (52 tons/yr) x (100 – [B])/100) = **Tons VOC/yr**

D. Potential to Emit HAP1:
(A) x (wt% HAP1/100) x (52 tons/yr) x (100 – [B])/100) = **Tons HAP1/yr**

E. Potential to Emit HAP2 (if more than one HAP):
(A) x (wt% HAP2/100) x (52 tons/yr) x (100 – [B])/100) = **Tons HAP2/yr**

F. Potential to Emit HAP3 (if more than one HAP):
(A) x (wt% HAP3/100) x (26 tons/yr) x (100 – [B])/100) = **Tons HAP3/yr**

G. Potential to Emit Total HAPs (if more than one HAP):
(D) + (E) + (F) = **Tons HAPs/yr**

TABLE 1: PROJECTED EMISSION REDUCTION FACTORS FOR SOLVENT DEGREASING[a]

System	Cold Cleaners		Vapor Degreaser		Conveyorized Degreaser	
	A	B	A	B	A	B
Control Devices						
Cover or enclosed design	X	X	X	X	X	X
Drainage facility	X	X	X			X
Water cover, refrigerated chiller, carbon adsorption or high freeboard[b]		X		X		X
Solid, fluid spray stream[c]		X		X		
Safety switches and thermostats				X		
Emission reduction from control devices (%)	13-38	NA[d]	20-40	30-60		40-60
Operating Procedures						
Proper use of equipment	X	X	X	X	X	X
Waste solvent reclamation	X	X	X	X	X	X
Reduced exhaust ventilation			X	X	X	X
Reduced conveyor or entry speed			X	X	X	X
Emission reduction from operating procedures (%)	15-45	NA[d]	15-35	20-10	20-30	20-30
Total Emission Reduction (%)	**28-83[e]**	**55-69 [f]**	**30-60**	**45-75**	**20-30**	**50-70**

a Ranges of emission reduction present poor to excellent compliance. X indicates devices that will produce the given reductions. Letters A and B indicate different control device circumstances.

b Only one of these major control devices would be used in any degreasing system. Cold cleaner system B could employ any of them. Vapor degreaser system B could employ any except water cover. Conveyorized degreaser system B could employ any except water cover and high freeboard.

c If agitation by spraying is used, the spray should not be a shower type.

d Breakout between control equipment and operating procedures is not available.

e A manual or mechanically assisted cover would contribute 6-18% reduction; draining parts 15 seconds within the degreaser, 7-20%; and storing waste solvent in containers, an additional 15-45%.

f Percentages represent average compliance.

If you are not sure what emission reduction percentage to use, choose the lower limit in the range. For example, for a cold cleaner that meets the control requirements in column A, choose 28 percent.

The above table is from Chapter 4.6, Table 4.6-3 of EPA's AP-42 document (www.epa.gov/ttn/chief/ap42/index.html)

EXAMPLE

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This worksheet can be used to calculate VOC and HAP emissions from cold cleaners and degreasers that use a non-halogenated cleaning solvent. If you are using a halogenated cleaning solvent and are subject to the Halogenated Solvent Cleaning NESHAP (40 CFR Part 63, Subpart T), use the equation in 40 CFR 63.465(e) to calculate potential to emit.

Company Name:	Name of Person completing form:
Small Business, Inc.	**John Small**

Degreaser Information

Description:

2 cold cleaners

Degreaser Type (check one):

☒ Cold Cleaner ☐ Open Top Vapor ☐ Conveyorized, Vapor ☐ Conveyorized, non boiling

Name of solvent used:

Mineral spirits

Ingredients (In the fields below list the name of each VOC contained in the solvent, enter the CAS number, check if the compound is a HAP, and enter the weight percent):

Compound	CAS Number	HAP?	Wt %
1. **Mineral spirits**	**64475-85-0**	☐	**100 %**
2.		☐	**%**
3.		☐	**%**
		Total Wt% VOCs	**100 %**
		Total Wt% HAPs	

Choose one of the following tables to calculate the potential to emit VOCs and HAPs. If more than one HAP is present in the solvent, you will need to calculate the PTE for each HAP and for total HAPs.

Cold Cleaner - Potential to Emit

A. Total Surface area of all cold cleaners : **10 ft²**	B. Control Efficiency (See Table 1 on Page 3):	**83 %**

C. Emission Rate
(A) x (0.08 lb/hr/ft²) = **0.8 lb/hr**

D. Potential to Emit VOCs
(C) x (wt% VOCs/100) x (8,760 hrs/yr) x (100 – [B])/100) x (1 ton/2,000 lbs) = **0.60 Tons VOC/yr**

E. Potential to Emit HAP1:
(C) x (wt% HAP1/100) x (8,760 hrs/yr) x (100 – [B])/100) x (1 ton/2,000 lbs) = **Tons HAP1/yr**

F. Potential to Emit HAP2 (if more than one HAP):
(C) x (wt% HAP2/100) x (8,760 hrs/yr) x (100 – [B])/100) x (1 ton/2,000 lbs) = **Tons HAP2/yr**

G. Potential to Emit HAP2 (if more than one HAP):
(C) x (wt% HAP3/100) x (8,760 hrs/yr) x (100 – [B])/100) x (1 ton/2,000 lbs) = **Tons HAP3/yr**

H. Potential to Emit Total HAPs (if more than one HAP):
(E) + (F) + (G) = **Tons HAPs/yr**