Rule 1144
Metalworking Fluids and Direct-Contact Lubricants


Source: U.S. Lubricants

Working Group Meeting #2

November 20, 2025 – 1:00 PM

Zoom URL: https://aqmd.zoomgov.com/j/1615426759
Dial In: 1 669 254 5252
Webinar ID: 161 542 6759 (applies to all)

Agenda

- Background & Current Rule Requirements
- VOCs and Exempt Compounds
- Stakeholder Survey & Questionnaire
- Initial Rule Concepts
- Next Steps

Background and Current Rule Requirements

Background

Adopted in March 2009 and last amended in July 2010

Purpose:

Limit VOC emissions from metalworking fluids and direct-contact lubricants

Applicability:

Users, manufacturers, and suppliers of metalworking fluids and direct-contact lubricants at industrial facilities

Current Rule Requirements

- Table lists current VOC limits on the different metalworking fluids and direct-contact lubricant
- The rule prohibits manufacturing and sale of metalworking fluid or direct-contact lubricant that contains more VOC than listed in this table

FLUID	VOC Limit (g/l)
(A) Vanishing Oil	50
(B) Metalworking Fluid	
(i) Metal Forming	75
(ii) Metal Removal	
(a) General	75
(b) Precision Metal Removal	130
(iii) Metal Treating	75
(iv) Metal Protecting	
(a) General	50
(b) Military Spec. Preservative	340
(C) Direct-Contact Lubricant	50

VOCs and Exempt Compounds

Volatile Organic Compounds (VOC)

A VOC is any volatile compound made of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds

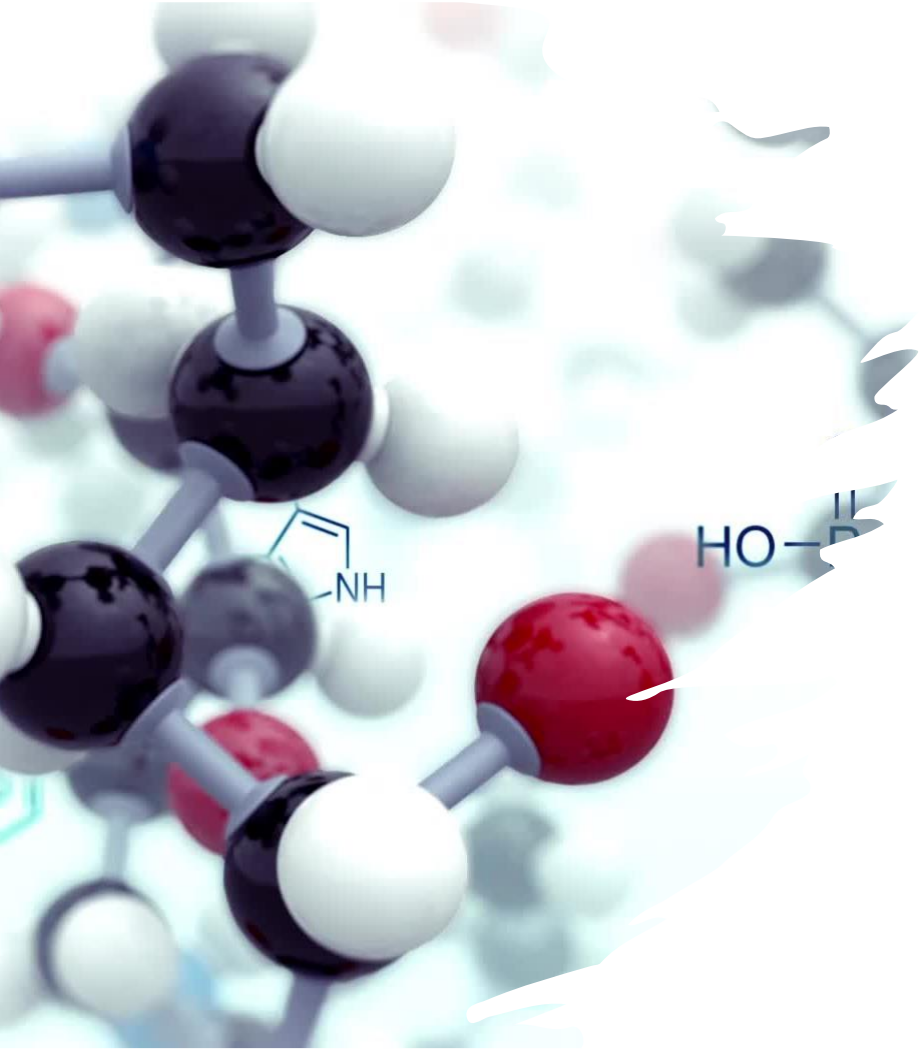
Can be photochemically reactive and contribute to the formation of ground-level ozone (smog)

South Coast AQMD controls VOC emissions by imposing VOC content limits

<u>Common Sources of VOC</u>

- Motor vehicles
- Coatings, paint, inks, and solvents
- Industrial processes
- Consumer products
- Biogenic (plants)

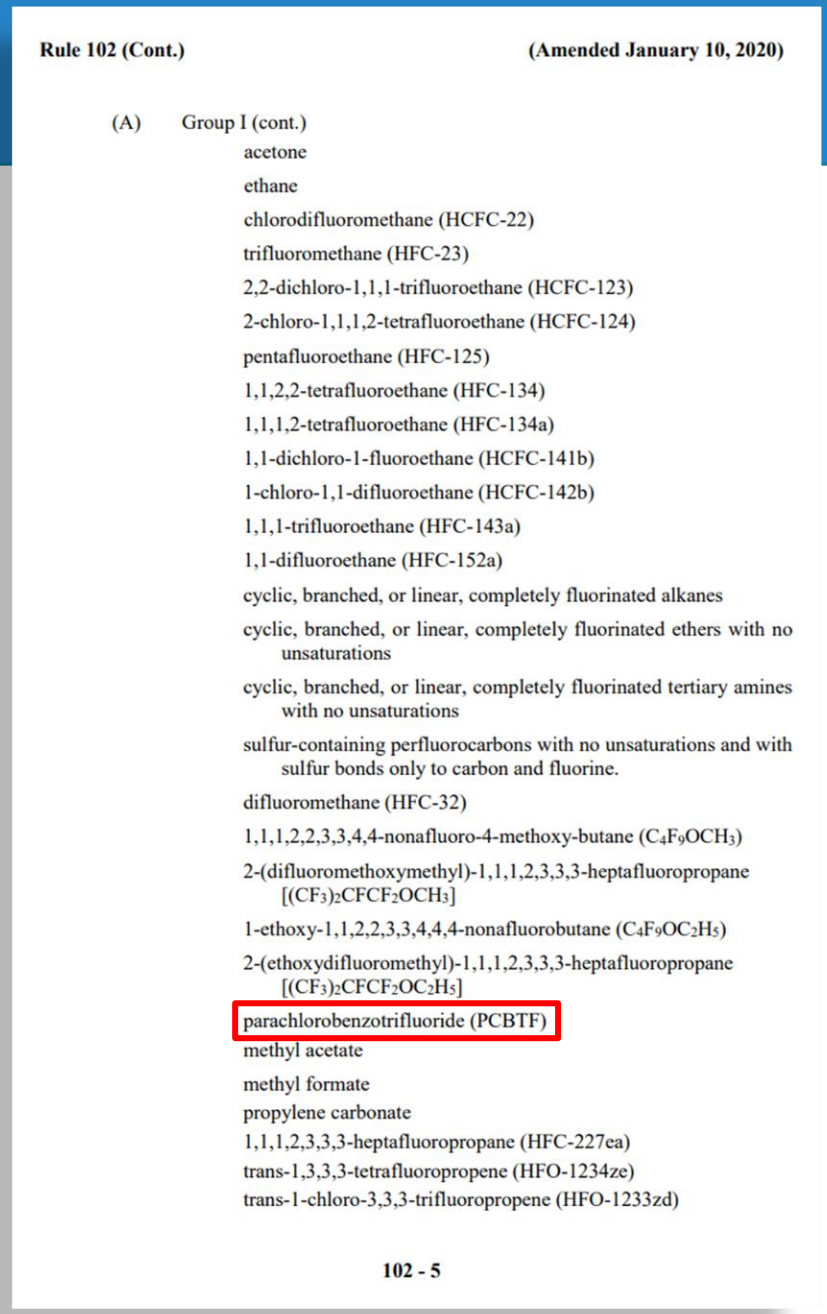
Exempt VOCs by U.S. EPA



- Certain solvents are defined as exempt from the definition of VOC by the U.S. EPA if they are negligibly photochemically reactive
  - Defined as less reactive than ethane
- Exempt compounds are not considered toward the VOC content of regulated materials
- U.S. EPA does not consider toxicity when making their designation
- Two exempt compounds of focus are parachlorobenzotrifluoride (pCBtF) and tertiary-Butyl Acetate (tBAc)

South Coast AQMD's Defined Exempt Compounds

- South Coast AQMD acknowledges compounds designated as exempt by U.S. EPA, but also considers the toxicity, ozone depletion potential, and other environmental impacts
- Rule 102 – Definition of Terms breaks exempt compounds into two groups: Group I and Group II
  - Group I lists the exempt compounds that are not expected to be restricted in the future
  - pCBtF is listed as a Group I compound in current Rule 102
- South Coast AQMD sometimes includes limited exemptions in source specific rules
  - Rule 1113 – Architectural Coatings and Rule 1151 – Motor Vehicle and Non-assembly Line Coating Operations includes limited exemptions for tBAc



Rule 102 (Cont.) **(Amended January 10, 2020)**

(A) Group I (cont.)

acetone
ethane
chlorodifluoromethane (HCFC-22)
trifluoromethane (HFC-23)
2,2-dichloro-1,1,1-trifluoroethane (HCFC-123)
2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)
pentafluoroethane (HFC-125)
1,1,2,2-tetrafluoroethane (HFC-134)
1,1,1,2-tetrafluoroethane (HFC-134a)
1,1-dichloro-1-fluoroethane (HCFC-141b)
1-chloro-1,1-difluoroethane (HCFC-142b)
1,1,1-trifluoroethane (HFC-143a)
1,1-difluoroethane (HFC-152a)
cyclic, branched, or linear, completely fluorinated alkanes
cyclic, branched, or linear, completely fluorinated ethers with no unsaturations
cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations
sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.
difluoromethane (HFC-32)
1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane ($C_4F_9OCH_3$)
2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane [$(CF_3)_2CFCF_2OCH_3$]
1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane ($C_4F_9OC_2H_5$)
2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane [$(CF_3)_2CFCF_2OC_2H_5$]
parachlorobenzotrifluoride (PCBTF)
methyl acetate
methyl formate
propylene carbonate
1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea)
trans-1,3,3,3-tetrafluoropropene (HFO-1234ze)
trans-1-chloro-3,3,3-trifluoropropene (HFO-1233zd)

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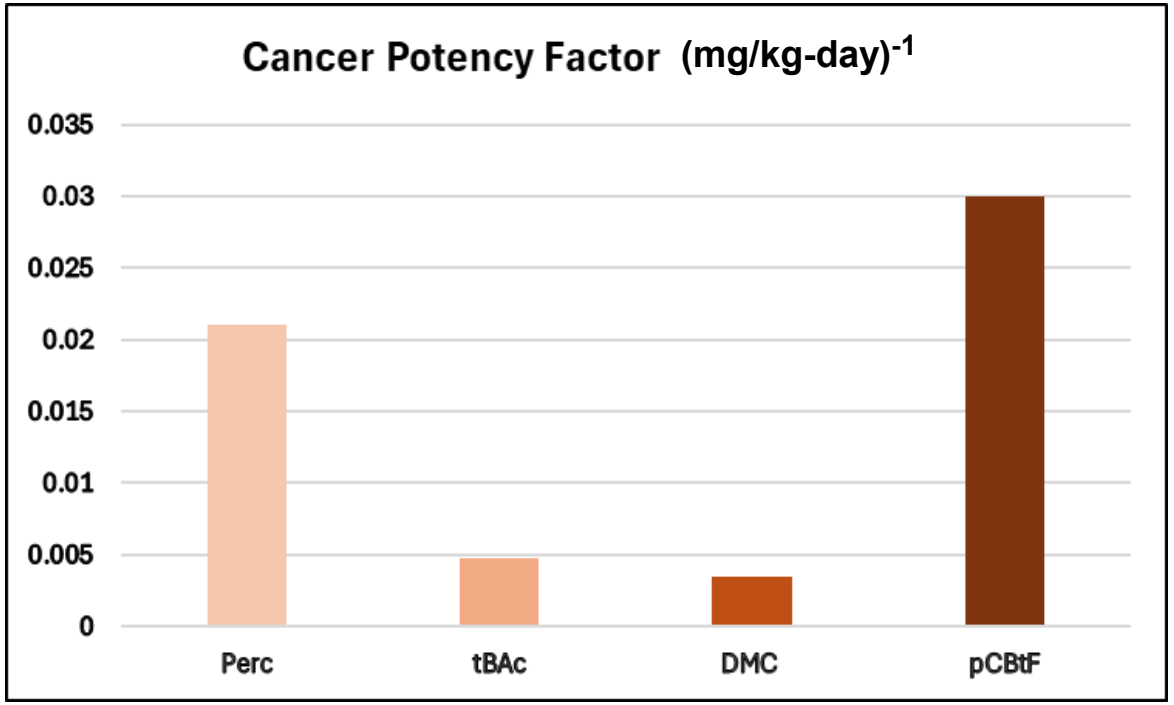
Cancer Potency Factor Comparison

- According to OEHHA, Cancer Potency Factor for pCBtF is much higher than tBAc, perchloroethylene (Perc), and Dimethyl Carbonate (DMC)
- In December 2024, EPA issued a final rule regulating Perc under the Toxic Substances Control Act (TSCA)
  - Protect people from health risks such as damage to the kidney, liver, and immune system, neurotoxicity and reproductive toxicity, and cancer from inhalation or dermal exposures
  - Set a 10-year timeline for Perc phase out from dry cleaning application



Prohibition Regulatory Timeline

1994
U.S. EPA exempted pCBtF as a VOC due to negligible photochemical reactivity

1995
South Coast AQMD exempted pCBtF as a VOC due to negligible photochemical reactivity

2004
U.S. EPA exempted tBAc as a VOC due to negligible photochemical reactivity

2015
Office of Environmental Health Hazard Assessment (OEHHA) released draft Cancer Potency Factor for tBAc – more toxic than previously believed

2017
South Coast AQMD staff drafted tBAc white paper regarding partial exemption of tBAc as a VOC and presented findings to South Coast AQMD Stationary Source Committee, who directed staff to prioritize toxicity over VOC emission reductions if confirmed as a carcinogen

2018
OEHHA finalized tBAc Cancer Potency Factor, concluding poses potential cancer risk to humans, South Coast AQMD requested OEHHA evaluate toxicity of pCBtF

2020
OEHHA finalized pCBtF Inhalation Cancer Potency Factor, concluding pCBtF poses greater cancer risk to humans than tBAc

South Coast AQMD Staff's Conclusion

Additional modeling supported the Stationary Source Committee's recommendation to remove the VOC exempt status of tBAc

OEHHA's assessment of tBAc and pCBtF shows compounds to be as toxic as many chemicals currently prohibited

Staff recommended prohibiting the use of tBAc and pCBtF

Stakeholder Survey and Questionnaire

Stakeholder Questionnaire Objectives

Questionnaire asked manufacturers and suppliers about manufactured products containing pCBtF and/or tBAc

Assist South Coast AQMD staff understand:

- Extent to which exempt solvents are used to formulate the products
- Readily available replacement under consideration by the manufacturer, if applicable

Questionnaire will help staff develop rule concepts

- Propose feasible prohibition timelines for tBAc and pCBtF from application in metalworking fluids and direct-contact lubricants

Stakeholder Questionnaire Status

The questionnaire was distributed on August 29, 2025

Responses were requested by October 27, 2025

Assess extent of pCBtF and t-BAc use and propose a feasible prohibition timeline

- Staff received responses from 5 independent manufacturers and 2 responses from organizations that represent additional manufacturers
- Staff met with Independent Lubricant Manufacturers Association (ILMA) to discuss feedback from represented manufacturers regarding the use of pCBtF and tBAc in their products
  - ILMA represents 126 manufacturers
- Based on the received feedback, no manufacturer is currently using pCBtF or tBAc in their products
- Indicates early prohibition of pCBtF and tBAc to be feasible

Initial Rule Concepts

Initial Rule Considerations

No intent to modify current VOC limits

Phasing out manufacturing, sale, and use of pCBtF and tBAc

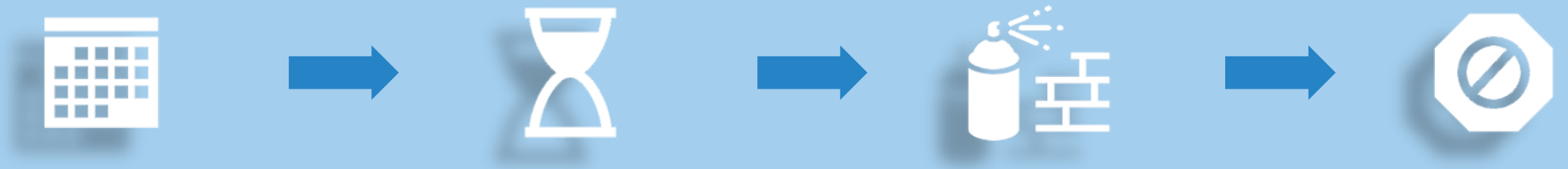
Updates to rule language to match current linguistic style and ensure order of subdivisions is consistent

Removal of obsolete rule language including effective dates that have already passed

Other updates that include correcting any grammatical or formatting errors

Phase-Out Approach Considerations

- Staff is considering step by step phase out with multiple dates
- Proposed approach includes provisions to address the time needed to use the existing inventory of metalworking fluids and direct-contact lubricants
  - ➢ Addresses manufacturers, distributers, and end-users of such products



Requiring cease of producing pCBtF/tBAc-based products for sale into South Coast AQMD by certain date (Manufacturing Prohibition Date)

Sell-through date allows manufacturers time to sell products already in the supply chain, manufactured prior to Manufacturing Prohibition Date

Use-through date allows end users time to use remaining products purchased before the prohibition on use takes effect

After the use-through date, there is a complete onsite prohibition on manufacturing, selling, and using of any pCBtF and tBAc containing products

Preliminary Phase-Out Timeline

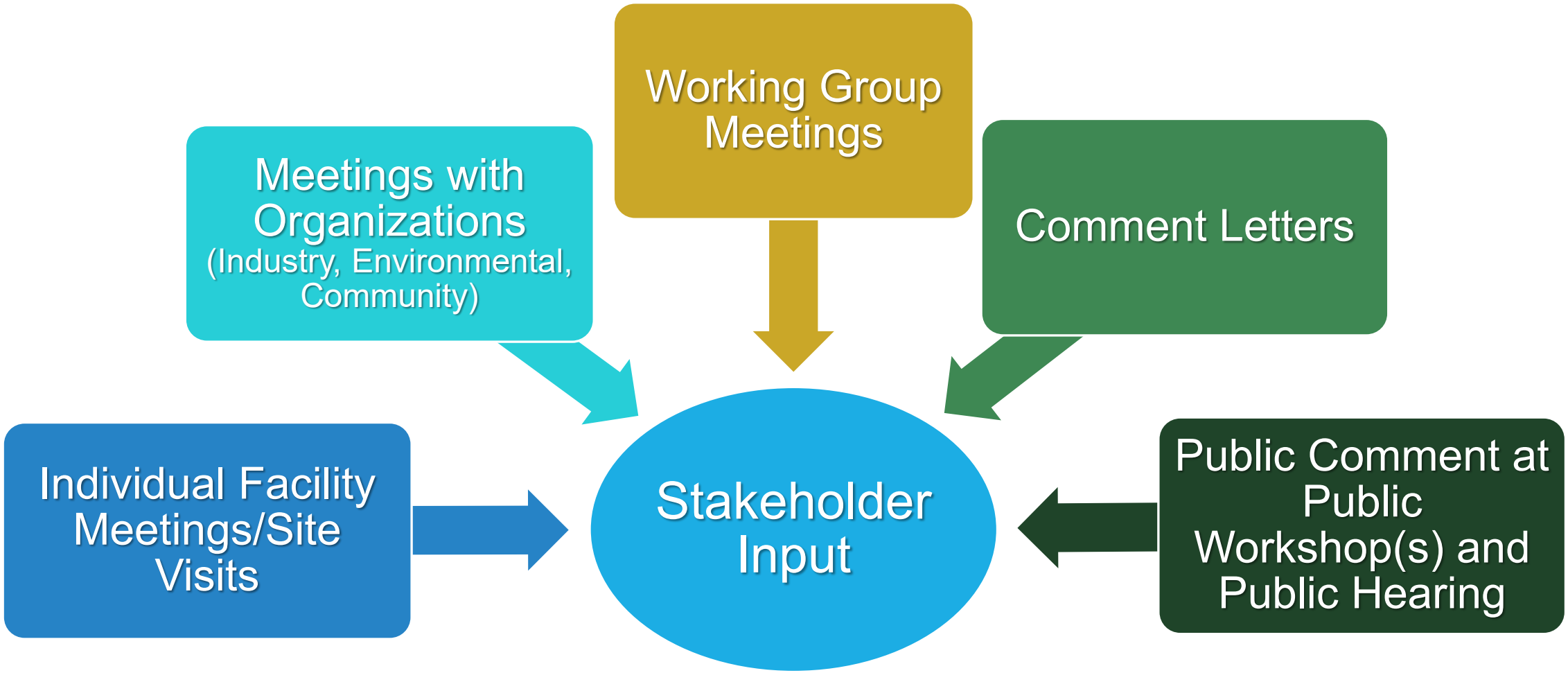
Final Manufacture Date	Final Sell-Through Date	Final Use-Through Date
July 1, 2027	**July 1, 2028**	**July 1, 2029**

Next Steps

Overview of Rule Development Process

Note: Staff is available throughout rule development to meet with stakeholders via telephone, email, virtually, or face-to-face

Stakeholders Input



Proposed Rule Development Schedule for PAR 1144

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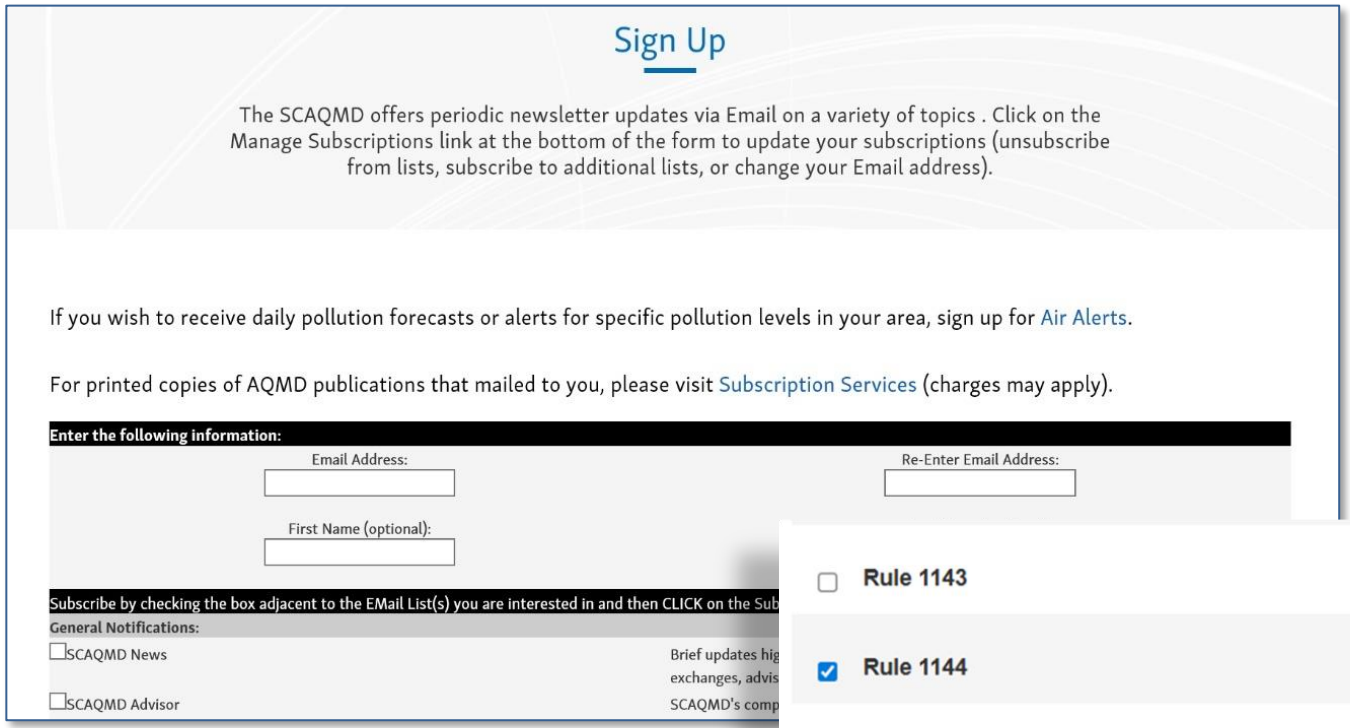

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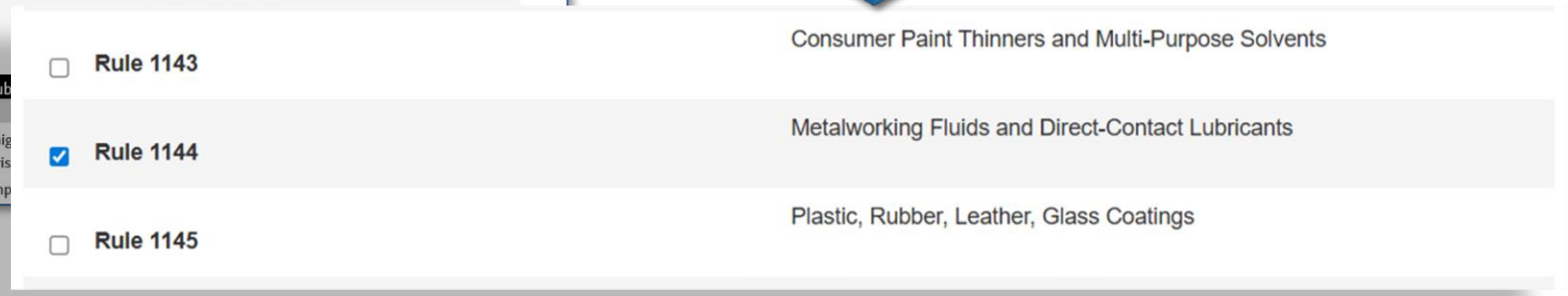

Staff Contacts

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