

SAMPLING SOLUTIONS

For Metalworking Fluids

Recognition

Metalworking fluids (MWFs) refer to oils and other liquids used to lubricate and cool metal workpieces during milling, grinding, and machining. MWFs are classified as “straight” oils (not meant to be diluted in water and may contain highly refined petroleum or animal, marine, vegetable, or synthetic oils); soluble oil (highly refined petroleum oils and emulsifiers); semi-synthetic fluids; and synthetic fluids (which may include detergent-like components). Additives such as stabilizers, biocides, dispersants, dyes, and odorants are often added to MWFs. There is a potential for the presence of contaminants that encourage the growth of bacteria and fungi if they are not handled properly. MWFs may also create welding fumes and polynuclear hydrocarbons (PAHs) when heated at high temperatures.

MWFs can enter the body through inhalation, dermal absorption, and ingestion. When not properly managed (lack of good hygiene practices), they may cause skin irritation, allergic contact dermatitis, and irritation of the eyes, nose, and throat. Additional effects may include breathing difficulties such as bronchitis or asthma and hypersensitivity pneumonitis (HP). Substantial evidence shows that past exposures to some MWFs were associated with increased risk of some types of cancer. Although actions taken in the last several decades have reduced that risk, it is not known if the risk has been eliminated. Severity of health effects depend on the MWF used, degree/type of contamination in the MWF, and exposure level/frequency/duration. SKC offers sampling solutions for metalworking fluids.

(Sources: <https://www.osha.gov/metalworking-fluids/health-effects>, <https://www.cdc.gov/niosh/topics/metalworking/default.html>)

Evaluation with SKC Sampling Solutions

For over 60 years, SKC has led the research, design, and manufacture of quality sampling equipment and media to aid health and safety professionals in the evaluation of occupational and environmental hazards. Choose from the SKC sampling solutions for metalworking fluids, which include high-quality filter media, samplers, accessories, and sample pumps.

See reverse side for SKC equipment and media for sampling the following compounds:

- Metalworking Fluids (particulate and aerosol)
- Oil Mist
- Mineral Oil
- Particulates, Not Otherwise Regulated (PNOR)/Total Dust
- Respirable Particulates
- Bacteria and Fungi
- Welding Fume

Refer to the Safety Data Sheet (SDS) from the MWF supplier to identify the stabilizers, biocides, dispersants, dyes, and odorants that may be within the MWF. See the [SKC Sampling Guide](#) for method summaries of specific potential by-products.

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Sample Collection

Active Air Sampling Solutions

Target Compound	Method*	SKC Sample Collection Media Cat. No.	SKC Sampler/Cassette/Accessories Cat. No.	SKC Sample Pump Cat. No.	Notes
Metalworking Fluids (thoracic particulates)	NIOSH 5524	Filter 225-17-33	Thoracic PPI Sampler 225-381 and Impaction Substrate 225-388 and Cellulose Support Pad 225-27 or Stainless Steel Screen 225-26	AirChek® TOUCH.. Essential+, or Connect	Method analysis requires a Filter Funnel not available from SKC. <i>See page 10 of the method.</i>
Metalworking Fluids (total particulates)	NIOSH 5524	Filter 225-17-33	Cassette 225-2LF and Cellulose Support Pad 225-27 and Filter Cassette Holder 225-1		Method analysis requires a Filter Funnel not available from SKC. <i>See page 10 of the method.</i>
Oil Mist/Mineral Oil	NIOSH 5026	Filter 225-3-01 or Filter 225-802	Filter Cassette Holder 225-1		
Oil Mist/Mineral Oil	OSHA ID-178SG	Filter 225-5-37-P	Cassette 225-2LF and Filter Cassette Holder 225-1		
Particulates Not Otherwise Regulated (PNOR)/Total Dust	NIOSH 0500	Filter 225-5-37-P	Cassette 225-2LF and Filter Cassette Holder 225-1		
Particulates Not Otherwise Regulated (PNOR)/Respirable	NIOSH 0600	Filter 225-5-37-P	Cassette 225-3LF and Cyclone 225-01-02 and Filter Cassette Holder 225-1		
Bacteria or Fungi	NIOSH 0800 NIOSH 0801	Agar plates – <i>see Notes</i>	Bioaerosol Impactor 225-9611	QuickTake® 30 Pump	Consult an analytical laboratory for the appropriate agar plates
Bacteria (on surfaces)		Surface Swab Kit 225-2402			Screening for biological contamination
Fungi (in air)		Spore Trap Cassette 225-9820		QuickTake 30 Pump	
Welding Fumes (total particulate)	OSHA ID-125G	Filter 225-3-01 or Filter 225-803 or Filter 225-3100 or Filter 225-8215	Filter Cassette Holder 225-1	AirChek® TOUCH.. Essential+, or Connect	

* Other methods may apply. Refer to an analytical lab to confirm the best method for your application.

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