



Standard Practice for the Toxic Contamination of the Environment in the Operator Enclosure of Self-Propelled Agriculture Vehicles¹

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1. Scope

1.1 This practice may be used to determine the level of specific harmful airborne contaminants within a vehicle operator enclosure under standardized test conditions. The air exchange rate, air pressure relative to ambient conditions, air temperature, and relative humidity maintained within the enclosure during the test are also determined. Operator-introduced contaminants are not addressed by this practice.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 SAE Standards:

SAE Air Cleaner Test Code (for Fine Dust)²
SAE J1012 Recommended Practice Agricultural Equipment Enclosure Pressurization System Test Procedure²

2.2 NIOSH Standards:

NIOSH 2549 Method for Xylene (Aromatic Hydrocarbons)³
NIOSH 2539 Method for Formaldehyde (Aldehydes)³
NIOSH S340 Method for Carbon Monoxide³
NIOSH Method for Malathion (Organic Phosphates)³
NIOSH *Manual of Analytical Methods*³

2.3 OSHA Standard:

OSHA Instruction CPL 2-2.20, Standard Methods for Sampling Air Contaminants⁴
SKC *Guide to NIOSH/OSHA Air Sampling Standards*⁵

3. Terminology

3.1 Definitions:

3.1.1 *aerosols, n*—small droplets of a liquid or particles of solid matter suspended in air, for example, a mist, fog, or smoke.

3.1.2 *air exchange rate, n*—the rate at which the air in a specific space is removed or replaced, or both.

3.1.3 *breathing zone, n*—the zone surrounding and immediately in front of operator's face. Assumed to be directly above front edge of operator's seat and 1.2 m above floor of enclosure.

3.1.4 *closed operator enclosure, n*—a structure for enclosing or enveloping the operator that is sufficiently air-tight to permit modification of the environment within.

3.1.5 *contaminant, n*—an undesirable component in any material or system.

3.1.6 *differential air pressure, n*—difference in the pressure exerted by air at a specific location relative to another selected location.

3.1.7 *dynamic test, n*—a test conducted while the test subject is undergoing specified motion.

3.1.8 *forced air ventilation, n*—air ventilation which is created or aided by a forced movement of air as by a fan or blower.

3.1.9 *gaseous, adj*—existing in the state of a molecular gas ($< 0.001 \mu\text{m}$ particle size); containing no liquid droplets or solid particles.

3.1.10 *mists, n*—cloud-like aggregation of liquid droplets having a diameter of $< 20 \mu\text{m}$ which are temporarily suspended in air.

3.1.11 *operator-introduced contaminant, n*—substance which is introduced by or as a result of actions of the operator (that is, as carried on operator's hands or clothing).

3.1.12 *primary filter (also particulate filter or fresh-air filter), n*—a device used for filtering suspended mists and particulate matter out of intake air.

3.1.13 *rated air flow, n*—rate of flow of air in or through a system specified for designed performance.

3.1.14 *recirculating filter, n*—filter used for filtering the air which is recirculated within the operator enclosure (see *secondary filter*).

¹ These test methods are under the jurisdiction of ASTM Committee E35 on Pesticides and are the direct responsibility of Subcommittee E35.26 on Safety to Man.

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² Available from Society of Automotive Engineers, 400 Commonwealth Dr., Warrendale, PA 15096.

³ Available from National Institute of Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, OH 45226.

⁴ Available from Occupational Safety and Health Administration, 219 S. Dearborn, Chicago, IL.

⁵ Available from SKC, Inc., 863 Valley View Rd., Eighty Four, PA 15330-9614.