

ANSI/ASABE S613-1 FEB2009 (R2013)

Tractors and Self-Propelled Machinery for Agriculture — Air Quality Systems for Cabs — Terminology and Overview



American Society of Agricultural and Biological Engineers

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1 Scope

This standard is intended for application to agricultural self propelled machinery including tractors as defined by ASABE Standard ASAE S390.4. It covers terminology, definitions and an overview of how cabs may be used in contaminated environments as part of an Occupational Health and Safety Management System.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ASAE S390.4 JAN05, Definitions and Classifications of Agricultural Field Equipment.

ISO 5353:1995, Earth moving machinery, and tractors and machinery for agriculture and forestry — Seat index point

ASABE/ISO 14269-1:1997, Tractors and self-propelled machines for agriculture and forestry — Operator enclosure environment — Part 1: Vocabulary

ASABE/ISO 14269-5:1997, Tractors and self-propelled machinery for agriculture and forestry — Cab environment — Part 5: Pressurization system test method

ANSI/AIHA Z10-2005, American Industrial Hygiene Association — Occupational Health and Safety Management Systems

3 Terms(s) and Definition(s)

For the purpose of this standard these definitions apply:

3.1 aerodynamic diameter: The diameter of a unit density sphere (i.e., density = 1.00 g/cm³) that would have the same settling velocity as the particle or aerosol in question.

3.2 aerosol: Small droplets of liquid or particles of solid matter suspended in air that are fine enough in size, 0.01-100 μm , [aerodynamic diameter] to have a negligible falling velocity (generally considered to be less than 0.25 m/s)

3.3 air exchange rate: The number of times per unit of time the air in the cab is replaced.

3.4 air flow rate: The volumetric unit of air transfer expressed in volume per relevant unit of time (m^3/h).

3.5 air intake: The designated area or opening through which air enters the cab.

3.6 air filtration: Removal of contaminants from the air, forced or drawn into the operator enclosure by mechanical means

3.7 air purifying device: The assembly that lowers the contaminant concentration in the air. Note, it can be a filter, sorbent, catalyst, a combination of these, or alternate technology capable of meeting the performance criteria.

3.8 air purifying efficiency: The ability of the air purifying system and/or device to remove contaminant matter

3.9 ambient conditions: Environmental conditions surrounding the work vehicle.

3.10 breathing zone: The zone surrounding the operator's face. Its center is located 660mm above the seat index point (SIP).

3.11 cab (operator enclosure): The part of the machine or tractor which forms a physical boundary between the space surrounding the operator and the outside environment. This boundary may comprise components such as the glass, roof and floor that completely surround the operator.

3.12 cab pressure: The pressure differential between the static pressure inside and outside the cab (ISO 14269 — Part 5), (Pa.)

3.13 cab volume: The interior free space volume of the cab without the operator present, (m^3)

3.14 catalyst: A substance that increases the rate of reaction but does not become part of the reaction product.

3.15 challenge concentration: The unit of contaminant per unit of volume used to test the system/air purifying device.

3.16 contaminant: Any unwanted material.

3.17 dermal exposure: An exposure to a contaminant by skin contact

3.18 droplet: A small, generally spherical shaped body of predominantly liquid material.

3.19 dust: Any particulate material, capable of being suspended in air, formed from a finely divided solid.

3.20 efficiency: A ratio of contaminant removed by the air purifying system/device to the initial contaminant present in the air stream.

3.21 engineering control: A designed measure used to reduce risk where it cannot be eliminated

3.22 exposure assessment: An estimate of the future, upper limit on the operator exposure to an air contaminant. This estimate is based on: the upper 95% tolerance limit computed from past data, published exposure data, or mathematical models. Practically future exposures will be less than this value. Quantitative exposure measurements are the preferred means of assessing worker exposure per ANSI/AIHA Z10 and 29CFR1910.134.