

January 12, 1998

WHS 98-01

TO: County Agricultural Commissioners

SUBJECT: APPLICATION OF CLOSED SYSTEM CRITERIA

Questions have been raised regarding how the director's closed system criteria (copy attached) relates to the personal protective equipment (PPE) exceptions and substitutions allowed in Title 3 California Code of Regulations when using a closed system. This letter should help to clarify the issue.

Section 6738(i) allows any person handling pesticides through a closed system to reduce labeling required PPE in specified situations. This provision applies to both liquid and dry pesticides and is not limited to mixing and loading. It extends to use of a closed application system as well. There is no further clarification in this section about what standards a closed system must meet.

Section 6746 requires a closed system to be used by employees who mix or load certain liquid pesticides. The director's closed system criteria are referenced. Both State (ENF 84-64) and federal (FIFRA Compliance Policy Letter 12.2) policy have long allowed for reduction of PPE in this situation. The provisions of section 6738(i) should be applied to this section.

A "closed system" is defined in section 6000. The definition includes a reference to the director's criteria. The current director's criteria were developed to implement the requirement of

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section 6746 and therefore address only liquid pesticides. There are no director's criteria applicable to dry pesticides or to the application of pesticides.

The American Society of Agricultural Engineers, in cooperation with U.S. EPA and other organizations [including the Department of Pesticide Regulation (DPR)], is developing a comprehensive national standard for closed systems. This standard will cover both liquid and dry formulations of pesticides. The Worker Health and Safety Branch intends to recommend that DPR adopt this standard as the director's criteria when it is final. Until this situation is resolved, we are recommending the following interim policy.

When a liquid pesticide is being handled pursuant to either 6738(i) or 6746, the director's criteria should continue to be applied. The absence of director's criteria for closed systems for dry formulations of pesticides and for application does not preclude a person from taking advantage of the allowable exceptions and substitutions in 6738(i). The use of these exceptions and substitutions does not constitute use of a pesticide in conflict with its labeling. The definition in section 6000 should be used to evaluate closed systems for dry formulations but the reference to the director's criteria is not applicable and should not be used in this case. A manufacturer's certification that their system meets the Worker Protection Standard is also acceptable. DPR does not anticipate approving closed systems for dry formulations of pesticides.

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Attached is U.S. EPA's response to questions on this issue. Their response is consistent with the policy outlined above. Pursuant to section 6701 it is accepted as DPR's interpretation.

Sincerely,

[Original signed by John M. Donahue and Charles M. Andrews]

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Attachments

cc: Mr. Daniel J. Merkley, County Agricultural Commissioner
Liaison (w/attachments)

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CLOSED SYSTEMS

Revised January 2, 1998

Design/Performance Criteria:

To meet California's requirements, a closed system should meet the following criteria. These criteria do not preclude closed systems utilizing procedures other than those outlined. Questions concerning the ability of other procedures to meet the closed system requirement should be addressed to the Department of Pesticide Regulation (DPR).

1. The liquid pesticide must be removed from its original shipping container and transferred through connecting hoses pipes, and/or couplings that are sufficiently tight to prevent exposure of any person to the concentrate, use dilution, or rinse solution.
2. All hoses, piping, tanks, and connections used in conjunction with a closed system must be of a type appropriate for the pesticide being used and, the pressure and vacuum of the system.
3. All sight gauges must be protected against breakage. Sight gauges must be equipped with valves so the pipes to the sight gauge can be shut off in case of breakage or leakage.
4. The closed system must adequately measure the pesticide being used. Measuring devices must be accurately calibrated to the smallest unit in which the material is being weighed or measured. Pesticide remaining in the transfer lines may affect the accuracy of measurement and must be considered.
5. The movement of a pesticide concentrate beyond a pump by positive pressure must not exceed 25 pounds per square inch (psi) of pressure.
6. A probe must not be removed from a container except when:

a. The container is emptied and the inside, as well as the probe, have been rinsed in accordance with item 8.

b. DPR has evaluated the probe and determined that, by the nature of its construction or design, it eliminates significant risk of worker exposure to the pesticide when it is withdrawn from a partial container.

c. The pesticide is used without dilution and the container has been emptied.

7. Shut-off devices must be installed on the exit end of all hoses and at all disconnect points to prevent the pesticide from leaking when the transfer is stopped and the hose is removed or disconnected.

a. If the hose carried pesticide concentrate and has not been rinsed in accordance with item 8, a dry break coupler that will minimize pesticide loss to not more than two milliliters per disconnect must be installed at the disconnect point.

b. If the hose carried a pesticide use dilution or rinse solution, a reversing action pump or a similar system that will empty the hose may be used as an alternative to a shutoff device.

8. When the pesticide is to be diluted for use, the closed system must provide for adequate rinsing of containers that have held less than 60 gallons of a liquid pesticide. Rinsing must be done with a medium, such as water, that contains no pesticide.

a. The system must be capable of spray-rinsing the inner surfaces of the container and the rinse solution must go into the pesticide mix tank or applicator vehicle via the closed system. The system must be capable of rinsing the probe, if used, and all hoses, measuring devices, etc.

b. A minimum of 15 psi of pressure must be used for rinsing.

c. The rinsing must be continued until minimum of 10 gallons or one-half of the container volume, whichever is less, has been used.

d. The rinse solution must be removed from the pesticide container concurrently with introduction of the rinse medium.

e. Pesticide containers must be protected against excessive pressure during the container rinse operation. The maximum container pressure must not exceed five psi.

9. Each commercially produced closed system or component to be used with a closed system must be sold with:

a. Complete instructions consisting of a functional operating manual and a decal(s) covering the basic operation. The decal(s) must be placed in a prominent location on the system.

b. Specific directions for cleaning and maintenance of the system on a scheduled basis.

c. Information on any restrictions or limitations relating to the system, such as pesticides that are incompatible with materials used in the construction of the system, types (or sizes) of containers or closures that cannot be handled by the system, any limits on ability to correct or over measurement of a pesticide, or special procedures or limitations on the ability of the system to deal with partial containers.

Operating Requirements:

10. The system must be cleaned and maintained according to the manufacturer's instructions. If the system is not a commercially produced system it must be maintained on a regular basis. A record of cleaning and maintenance must be maintained.

11. All labeling required personal protective equipment (PPE) must be present at the work site. Protective eyewear must be worn while using a closed system that operates under pressure. While using a closed system, PPE requirements may be reduced or modified as provided in Title 3 California Code of Regulations, section 6738.

Information about closed systems which have been evaluated and found to meet these criteria is available from DPR.

4.1 Definitions
(continued)
4.14 closed systems

Q. What is the definition of a closed system? What personal protective equipment is required when a closed system is used?

A. At 40 CFR part 170.240(d)(4), the WPS defines closed systems and allows exceptions to labeling required personal protective equipment (PPE) when a closed system is used provided certain conditions and requirements are met. These exceptions to PPE are allowed unless expressly prohibited by the product labeling.

Closed systems are systems designed by the manufacturer to enclose the pesticide to prevent it from contacting handlers or other people while it is being handled. Such systems must function properly and be used and maintained in accordance with the manufacturer's written operating instructions. Closed systems manufactured by a private person which meet the criteria in the regulations, including the requirement for written instructions, are acceptable.

Examples of closed systems include:

- 1) closed mixing/loading systems;
- 2) closed application systems designed to incorporate pesticides into soil, but only if the system does not allow any pesticide contact with the air throughout the entire application process.
- 3) water soluble bags while the bag is intact.

The WPS provides that handler employers may allow handlers to omit some of the PPE listed on the pesticide labeling for a handling task if the handlers are using a closed system:

- 1) When using a closed system to mix or load
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Worker Protection Questions & Answers

- 4.1 Definitions (continued) pesticides with the signal word "DANGER" or "WARNING," handlers need not wear all the PPE listed on the pesticide labeling, but must wear at least:
- 4.14 closed systems (continued)
- long-sleeved shirt and long pants,
 - shoes and socks,
 - a chemical-resistant apron, and protective gloves specified on the pesticide labeling for mixing, loading, and other handling
- 2) When using a closed system to mix or load pesticides with the signal word "CAUTION," handlers need not wear all the PPE listed on the pesticide labeling, but must wear at least:
- long-sleeved shirt and long pants, and
 - shoes and socks.
- 3) When using a closed system to do handling tasks other than mixing and loading with ANY pesticide, handlers need not wear all of the PPE listed on the pesticide labeling, but must wear at least:
- long-sleeved shirt and long pants, and
 - shoes and socks.
- 4) When using a closed system that operates under pressure, handlers may wear the reduced PPE specified above, but must add protective eyewear.
- Even when reduced PPE is permitted to be worn during a task, handlers must be provided all PPE required by the pesticide labeling for that task and have it immediately available for use in an emergency.
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Worker Protection Questions & Answers

- 4.1 **Definitions**
(continued)
- 4.14 closed systems
(continued)
- NOTE: For mixing/loading/transferring of pesticides outside the scope of WPS, follow the FIFRA Compliance Program Policy 12.2, Pesticides Closed Transfer, Mixing/Loading and Application Equipment (Closed Systems).

Worker Protection Questions & Answers

- 4.1 Definitions
(continued)
- 4.15 water-soluble
bags
- Q. Is a water soluble bag considered a closed system?
- A. Yes, for WPS purposes, a water soluble bag is considered a closed loading system and, unless prohibited by the product labeling, handlers may be permitted to wear reduced personal protective equipment (PPE) as outlined in 40 CFR part 170.240(d)(4).
- Once a water soluble bag is dissolved, broken, punctured, torn, or otherwise allows its contents to escape, it is no longer a closed system and label-specified PPE must be worn. In the case of routine mixing and loading with water soluble bags, label-specified PPE for the activity performed must be worn once the bags have lost their integrity, i.e., begin to dissolve in the tank, unless the mix Tank and transfer system are closed systems. (February 24, 1994)