SOP: 4.1 R1

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APPROVED BY: see cover page

TITLE: **Labeling, Storage, Transport, and Measurement of the Test Substance**

PURPOSE: Provide guidelines to ensure the test substance is stored properly and integrity is maintained during transport; ensure the amount of test substance used in the study is accurate and verified; and ensure that pesticide concentrate, spray solutions, rinse water, and containers are disposed of with minimal environmental contamination and in accordance with local regulations.

SCOPE: Applies to all field trials in Minor Use Foundation's magnitude of pesticide residue studies.

PROCEDURES:

I. Labeling and Storage

a. Upon receipt of the test substance, observe the physical condition of the containers and inspect for container wear, breakage, tampering with tamper-evident seals, unreadable or damaged labels.
b. Confirm that it has been characterized under GLP, that an expiration date is indicated on the container or in the Certificate of Analysis (COA), and that the test substance received matches what is indicated in the study protocol. Verify that the information on the label of the container matches that on the COA and in the protocol. Contact the Study Director if there are any discrepancies.
c. Record the amount received, name of the person who received it, and other information related to the test substance that is located on the label or in associated paperwork received. This information is to be recorded in Part 4 of the Field Data Notebook. The container label should include the code or lot/batch number provided by the manufacturer, expiration date, formulation, quantity, and be marked as being GLP characterized.
d. Store the test substance under conditions that prevent cross-contamination with other pesticides, loss of homogeneity, or stability. The test substance storage area is usually in a secure, clean, dry space. Document storage temperature with a temperature recording device during the life of the study.

e. The original containers for all GLP test substances and adjuvants must be retained until completion of the study, and permission is given by the study director, regional coordinator, or other pertinent source to dispose of the containers.
f. Temperature monitoring should begin as soon as possible upon receipt of the test substance (or at least within two days), regardless of where it is held or stored. Be sure the storage area does not get too hot or too cold; review the storage conditions recommended by the manufacturer/registrant.
g. The storage facility should have limited access by the utilization of a lock and key so that only authorized persons may have access to GLP test substances.
h. Place a highly visible, waterproof identification sign on the door of the storage facility to advise of the hazardous nature of the storage facility's contents.
i. Post the telephone numbers and names of personnel responsible for and knowledgeable of the contents of the storage facility.
j. Make accessible materials such as (but not limited to, nor necessarily all) adsorptive clay, granulated activated charcoal, hydrated lime, and sodium hypochlorite for emergency treatment or detoxification of spills or leaks.
k. Post a current inventory of all test substances in the storage unit in an inside location accessible and visible to study personnel.
l. Adjuvants used in GLP trials should be stored in conjunction with the GLP test substances.
m. The storage area for the test substance and adjuvants should be separate from but may be adjacent to non-GLP pesticides to preclude contamination or mix-up.
n. If an adjuvant does not have an expiration date, use the purchase date as the initial date and add it to the container. It should be replaced 3 years after its purchase date.

II. Transport

a. If application of the test substance is to be made some distance from the test substance storage area, the original container can be transported to the field, accompanied by the product safety data sheet and separated from the application equipment. It is also acceptable to pre-measure the required amount needed for the application, which can be placed in an appropriate container and labeled properly with the trial number, chemical name, trade name, batch/lot number, expiration date, treatment number, and amount (weight or volume). It is advisable to also transport a second pre-measured amount of test substance as a backup, in the event the first pre-measured amount is accidentally spilled.
b. During transport, ensure the integrity of the test substance by including blue or wet ice in the transport container (e.g., a cooler) and document the temperature during transport with a temperature recording device placed in the transport container. Document transport temperature and procedures used during transport in the field data notebook. Similarly, when a test substance is used, the date, amount used, purpose of use, and initial/signature of the user should be recorded in the pesticide storage log.

III. Measuring the Test Substance

Before measuring a liquid formulation of the test substance, it must be shaken thoroughly to ensure homogeneity. When opening the lid, it is necessary to wait about 5 seconds to permit chemical vapor to be released to the air. Use appropriate personal protective equipment while handling the test substance.

Liquid Formulations:
Obtain a clean container large enough to hold the volume of test substance needed and graduated in increments small enough to ensure accurate measurement. For example, if the amount needed is less than 10 ml, use a pipette, graduated cylinder, or syringe with 0.1 ml increments. If the amount needed is 10 to 25 ml, increments should be 0.2 ml; if 25-100 ml, increments should be 1.0 ml; if 100-250 ml, increments should be 2.0 ml. If greater than 250 ml, a cylinder with 5 ml increments is adequate. Carrier (e.g., water) is usually needed in amounts greater than 1,000 ml, and using a cylinder with 5- or 10-ml increments is adequate. Reading of the liquid test substance or water should be made at the bottom of the meniscus.

1. If the opening of the cylinder is too restricted to allow pouring of the test substance from the original container into a graduated cylinder without danger of spillage, do one of the following:
    a. Use a clean glass container with a pour lip as an intermediate and fill the cylinder from it.
    b. Use a clean funnel large enough to allow filling the cylinder with a minimum of spillage.
    c. Use a pipette with appropriate gradations and a squeeze bulb to extract the test substance directly from the test substance container and inject it into the spray tank.
    d. Use a syringe with appropriate graduations to extract the test substance from the container and inject it into the spray tank.

2. Add some pre-measured water to the spray tank. Pour the liquid test substance directly into the spray tank. If a graduated cylinder is used to measure or transfer the test substance, triple-rinse the cylinder with some pre-measured water; add this rinsate to the spray tank.

3. The amount of test substance and water needed for the application is determined by knowing the rate of the formulated test substance per hectare and plot size. Once dosage and water for the individual plot are determined, allow for and calculate overage (e.g. ≥25% of the required amount) for the test substance and water, to ensure there is enough test substance solution to prime the boom and to reduce the risk of running out of solution before exiting the plot.

4. If the use of an adjuvant is required by the protocol, ensure that the order of adding each component to the spray mixture is the following order: 1- Water, 2- Test Substance, 3- Adjuvant, and 4- Water.

Dry Formulations:

1. Select a clean container suitable to hold the desired amount of pesticide and tare it on the scale. Do not lean on or bump the weighing table when using scales.

2. The scale should be verified immediately before weighing the quantity of test substance for use in the study. A set of certified, stainless-steel weights can be used for scale verification. Verification can be accomplished as follows: Place on the scale the container into/onto which the test substance will be weighed and tare the scale. Then, bracket the weight, as appropriate (e.g., if 7 grams of test substance is required, verify with certified weights of 5 grams and 10 grams), and record the verification. Do not use the scale if the scale reading varies more than 1% from the certified weight. If the variance is greater than 1%, then use a backup scale that has been properly calibrated.

3. Add the test substance into/onto the tared container and record the weight. When transferring the test substance from the weighing container to the spray tank, be sure to remove all the test substance. (If necessary, rinse the container with some of the pre-measured carrier and add the rinsate to the spray tank.) The test substance can be added directly to the spray tank, as follows: add some pre-measured water to the tank, add the test substance, and stir, swirl, or shake to dissolve the material, then add the remaining pre-measured water. Swirl, stir, or shake again to make sure the solution is well mixed.

4. Alternatively, with some difficult-to-dissolve dry formulations, it may be desirable to create a slurry before adding the test substance to the spray tank. If so, with the use of a stirring rod, mix the measured amount of test substance into a slurry with some pre-measured water. Add some pre-measured water to the spray tank and then pour the slurry into the spray tank. Rinse the slurry container at least three times with additional pre-measured water and pour each rinsate into the spray tank. Add the remainder of the pre-measured water to the spray tank and attach the cap or lid. Agitate or shake carefully to mix the contents.

5. The amount of test substance and water needed for the application is determined by knowing the rate of the formulated test substance per hectare and plot size. Once the dosage and water for the individual plot are determined, allow for and calculate overage for the test substance and water, to ensure there is enough test substance solution to prime the sprayer and to reduce the risk of running out of solution before exiting the plot.

6. Use appropriate safety equipment while handling pesticide concentrate and spray

solution.

Granular Formulations:

1. Follow the protocol for the method of measuring and applying a granular formulation to the plot without dilution. Generally, the method will be to weigh as for a dry formulation, but instead of mixing with water, pour the test substance directly into the application equipment or spreader. Determine that the spreader is in good working order and good mechanical condition. Make sure that the openings to release the granular material are not clogged and free of debris. Refer to the manual for the calibration method.

IV. Disposal of Test Substance

1. Where institutional policies and guidelines do not exist, the following procedures should be followed.

2. Disposal of pesticide concentrate and/or containers.

    a. Follow procedures in the protocol. Generally, containers cannot be disposed of under GLP until the study is completed. If it is necessary to dispose of the container before the end of the trial(s), the Study Director should be consulted.

    b. Where possible, the pesticide concentrates and containers should be returned to the registrant or manufacturer. Transportation must be in accordance with local laws and regulations. Consult the Study Director for guidance.

    c. Follow label directions for use or disposal of the pesticide if option 2.b is not available.

    d. If no label directions exist for disposal, arrangements should be made with a licensed waste disposal firm for pickup and disposal of the pesticide and/or the empty containers.

3. Disposal of pesticide rinse water, unused spray solutions, and other dilute pesticide waste after a test application.

    a. Check local laws and regulations to determine any procedures that may exist for the proper disposal of pesticide solutions.

    b. Dispose of the dilute pesticide waste in the field by adding carrier (e.g., water) to the spray tank and spraying on an overplanting of the crop or an open field of

grass/weeds. All pesticide solutions should be mixed with the intent of limiting the problem of excess solutions.

c. Triple rinse the spray tank/container (i.e., add carrier to the tank and spray out).

Approved by:



October 5, 2026

Anna Gore, Executive Director
Minor Use Foundation

Date