Best practice for general handling of herbicides to minimise risks of point source pollution.

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European Glyphosate Environmental Information Source

Important Notes to users:

This document is part of a toolbox which provides independent information on the sustainable use of glyphosate. It cannot however be definitive and users must ensure that they assess local factors and particularly take account of any national or regional legislative requirements. At the end of the document reference sources used in its preparation and links to other relevant documents are provided.

Summary

All pesticides need to be handled carefully to avoid any risks of contamination of water Routes to water vary but studies have shown that in some water catchments point sources can be responsible for 50 to 80 % of the contamination in surface water.

Every step in the handling of pesticides on the farm can present a risk of contamination. These include: transport, storage, handling before spraying (mixing and loading), handling during spraying, handling after spraying and residue management. All of these need to be managed carefully but experts agree that the most risky are mixing and loading and residue management. This document provides guidance on best practice to avoid all these risks.

Detailed information

Best practice in general pesticide handling on the farm protects water quality and also minimises health risks for farmers. This document provides best practices for each step in the handling of pesticides on the farm.

Transport

Pesticides should be transported in their original containers, with intact and readable labels. Avoid impact damage whilst on/off loading cargo. To avoid any risk of leakage from damaged containers, use a clean, dry loading space in vehicle, free from protruding screws, nails or other sharp objects and adapted to retain spills. Always observe special instructions on packing such as "this way up". Cargo should be well balanced, safely stowed and secured before departure.

Storage

The pesticide storage room should be located away from all sensitive areas (e.g. close to water or domestic dwellings) to minimise risks, and should be lockable, fire resistant, with appropriate safety and hazard signs at the store entrance. Keep instructions on hazards and emergency telephone numbers in visible place near the storage room.

The room should be bunded or equipped with a closed collection system for any spills. Shelves should be non-absorbent and without sharp points, and floors should have a smooth finish for ease of cleaning. Containers of absorbent inert material like wood-dust together with a floor brush, dustpan and plastic bags must be clearly located and always available within the store.

In case of leaking containers, isolate leaking or damaged packs within store. Retain and safely dispose of all spills, splashes, leaks and all other accidental losses of pesticides immediately, do not wash spills down drains.



Source : ARVALIS – institut du végétal

Handling before spraying

Spraying activities should be properly planned and organised. Existing and predicted weather and ground conditions must be assessed for risk of herbicides losses from the intended treatment area. Identify sensitive zones for water contamination and for key fauna and flora. There should be three main objectives:

Avoiding contamination of the water distribution network

To avoid contamination of potable water supplies measures to avoid back-siphonage must be used. These must effectively separate the water supply system from the spray solution by such means as:

- anti back flow device,
- intermediate water tank,
- use of “gallows” device to ensure air gap between the filling hose and the mixing solution
- flow meter


Source : ARVALIS – institut du végétal

Avoiding contamination of water

While mixing and loading sprayer, do not overfill or let foam escape from spray tank, and do not leave sprayers unattended when they are being filled. To avoid overflow and contamination of water intermediate water tank and flow measurement devices can also be used. Mixing and loading areas should be designed to contain spills in case of overflow. It must be impermeable to enable easy removal of any spills or surplus spray material.

Minimising the volume to be sprayed

During preparation, use dedicated measuring devices, rinse emptied containers and seals immediately and add this rinsing liquid to spray solution. Waste water containing herbicide should be collected for immediate use in spray operation or for further treatment and disposal. Never leave spills on the hard surface after mixing and loading. Preparing spray solutions just prior to use helps minimise surplus spray solutions.

Handling during spraying

Use well-suited and maintained spraying devices: use a sprayer which minimises non-sprayable solution, and correct nozzle type and size, with anti drip devices. If repairs are needed, it should be done on a secured area. Sprayers with spray rinse tanks are preferable. Always verify and calibrate sprayer for optimised application of herbicides. Water courses, wells, drains, springs, hard surfaces and buffer zones must not be sprayed over.

Handling after spraying

After use the sprayer must be cleaned both internally and externally. Any residual spray should be managed carefully. This can be done on farm or in field, mostly depending on the spraying material available. To rinse properly on field, the sprayer should be equipped with rinsing tank and inside rinsing nozzles. For effective cleaning you should use the triple rinse method in order to be able to drain the left over spray onto the field **:**

Cleaning of the inside of the sprayer

1. Do spray to the pump unprimed
2. Do dilute the residual spray solution with at least 5x the volume of this residue, with clear water
3. Make this diluted residue circulate in all the system (incorporation, timing system, tank back, pump back, mixing system) in order to dilute all the dead volumes.
4. Do spray in the field the diluted solution to pump unprimed
5. Repeat the operation with sufficient water volume and sequencing to dilute the spray solution concentration by 100
6. Clean the filters
7. Drain the final diluted tank bottom material in compliance with national regulation or reuse it for the next spraying operations.
8. If in-field rinsing is not possible, rinse at a site that ensures all rinse water is directed to a properly designed residue collection and/or treatment system.

External cleaning

If possible clean the sprayer in field away from water course or well. External cleaning in the farm should be conducted on a bunded impermeable surface that ensures all rinse water is directed to a properly designed residue collection and/or treatment system.

Residue management

It is best practice to minimise all residues and wastes associated with pesticides and their use. Unwanted stock should be identified, secured and sheltered in a designated area. Contaminated packaging material should not be burned or buried. Read label instruction concerning package disposal.

Residues should never be directly (or indirectly via drains) dumped in any water course, or buried in the soil. Where legally permissible, diluted liquid disposable fractions can be collected for on farm treatment or collection by an authorised waste disposal contractor.

Reference for further detailed information:

1. Best Management Practices Guideline, thematic guidelines and technical flyers– TOPPS Life European Project (Click here)

See also:

- Best practice for chemical weed control on hard surfaces.
- Weed control on roads and pavements: Costs and environmental impact of different options
- Best practice to minimise risks to water from the agricultural use of glyphosate
- Environmental fate and behaviour of glyphosate and its main metabolite

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J. Maillet-Mezeray / A. Morin ARVALIS Institut du Végétal	Final	February 2010