

How pesticides get into water



Storage

Pesticides stores hold a lot of concentrated chemical; a fire or a leak at chemical store can have a huge impact downstream.



Sprayer Filling

Drips and spills of concentrated pesticides or pellets can have a big effect on water quality.



Over Spray

Spraying over watercourse can kill aquatic life as well as jeopardising water quality.



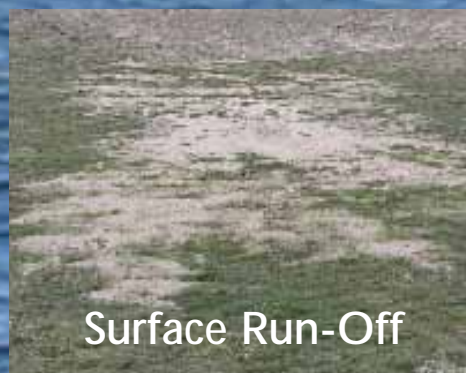
Drift

Drift can concern neighbours and harm aquatic life and water quality.



Drain Flow

Pesticides attached either to soil particles or in solution can reach water when drains are flowing.



Surface Run-Off

Pesticides can leave the field during soil erosion and in surface run-off.



Cleaning

Large quantities of dilute spray solution are generated during container cleaning and sprayer washing; this can easily reach water through farm drains.



Disposal

Burying pesticide wastes in a tip is illegal and results in long term damage to water quality.

Priorities and Basics

Failure to voluntarily reduce the levels of pesticides in water may result in restrictions on their use. To ensure products remain available without further national or local restrictions, everyone needs to carefully plan and spread their use so as to minimise the risks to water.

Priorities

• Slug Pellets

- Metaldehyde was detected in raw water for the first time in 2007 as analytical techniques have improved; it is now confirmed as a widespread problem
- Methiocarb is not causing problems in water but has a buffer zone requirement and needs just as much care as any slug pellet

• Chlorotoluron (CTU)

- The revocation of IPU and trifluralin puts increased pressure on CTU

• Propyzamide, carbetamide and metazachlor

- 6m Grass Buffer Strips are essential where winter oilseed rape or winter beans are being grown adjacent to water
- Best practice advice for keeping propyzamide and carbetamide out of water is challenging and may compromise weed control

• Mecoprop-p

- Major changes to the approval of this herbicide affecting the time of use and permitted crops have been made. Check labels and recommendations with your agronomist
- Mecoprop-p has been regularly detected in raw water in both winter and the spring

• Clopyralid

- Up to 2007 clopyralid did not pose a significant issue, but has been recently detected in raw water in some catchments

• Bentazone

- Occasionally detected in groundwater a new Water Protection Advice Sheet is available

Discuss these priorities with a BASIS registered agronomist

The Basics

Responsible pesticide use means getting the basics right all the time

- Protect all watercourses with 6m grass buffer strips or 5m no spray/spread buffer zones.
- Manage soils to avoid erosion and run-off.
- Ensure all pesticide applications (sprays and pellets) are made by trained and qualified staff.
- Ensure filling and container cleaning takes place well away from drains and watercourses.
- Calibrate sprayer and regularly check for leaks or drips.
- Do not apply pesticides to dry, cracked or saturated soils.
- Do not apply pesticides if heavy rain is expected within 48 hours of application.
- Apply pesticides with care. Do not overspray water courses.
- Clean application equipment over a lined biobed or in the field away from watercourses and drains.
- If in doubt, check it out. Consult a BASIS registered agronomist.

Grass buffers, oilseed rape & beans

Some pesticides used on winter oilseed rape and winter beans are reaching water courses as a result of soil erosion, surface run-off, poor application practice as well as drainflow. Grass buffer strips can reduce some of these losses by at least 50%. Should you be establishing grass buffer strips?

- Are you planning to grow winter oilseed rape or winter beans in any fields next to a water course?

If YES
Read on

- Ask your agronomist if you are likely to use metaldehyde slug pellets or a product containing any of these herbicides in your winter oilseed rape or winter bean crop?

- Carbetamide
- Clopyralid
- Metazachlor
- Propyzamide

If YES
Read on

- If you answer YES to both questions then you **SHOULD** establish at least a **6m grass buffer strip** next to all water courses adjacent to rape or bean fields.

Grass Buffer Strips

Establish grass buffer strips adjacent to water courses a year before the winter oilseed rape or winter bean crop.

Grass buffer strips should be a minimum of 6m wide measured from the top of the watercourse bank. The wider the better. Fields with slopes of more than 5% or with long runs to the field edge may need buffers of up to 20m or more.

Sow a standard grass mixture or as agreed in any stewardship plan. If possible use different grass species, legumes and wildflowers to benefit biodiversity.

Look after the grass buffer strip:

- Follow any stewardship scheme advice/requirements.
- Make sure there are no breaks, gateways, tracks or “grips” (temporary channels) through the strip as these will channel water creating an erosion problem and undo the benefits of the strip.
- Inspect buffer strips in the winter during heavy rain and when fields are at capacity. Check if they are reducing or slowing down surface runoff and soil particles are being deposited.
- Do not dig “grips” to drain standing water from the field.

Discuss where grass buffer strips are needed with a BASIS registered adviser

Soil Management

Well managed soils reduce risks of soil erosion and pesticide losses from surface run-off or in sediment. Manage soils to retain organic matter and protect structure. Ensure that water cannot run-off from the treated area onto another field, road, track or other feature from where it could directly enter a watercourse. Follow national regulations and codes of Good Agricultural Practice, Cross Compliance requirements and use the Soil Management Plan to reduce risks of erosion.

- Check for pan presence and depth before sub-soiling.*
- Do not overwork the soil so that it becomes slaked or capped.
- Tramlines should run across slopes where practical, NOT down slopes leading to a watercourse.
- Where possible avoid establishing tramlines at drilling.
- Use wide low ground pressure tyres to reduce rutting
- 50% trash cover and rapid crop establishment can reduce the impact of raindrops which break down soil crumbs and can trigger soil erosion.

Risks can be reduced further by measures such as those listed below. These require long-term planning.

- Review rotations to avoid cropping practices and cultivations on soils and slopes which are at risk of erosion. This should be part of your Soil Protection Review.
- On slopes over 5% (1 in 20) running for more than 200m, establish a beetle bank or at least 6m grass strip across the entire field. Locate this break where the slope changes.
- Grass down valley bottoms leading to any watercourse.

Advice and training on soil management can be obtained from the Environment Agency's "thinksoils" programme.

Dry, Cracked or Saturated Soils

Ideal conditions for herbicide application are a dry soil profile with a moist soil surface.

Dry Cracked Soils – Avoid applications of pesticides to soils that are dry and cracked as water carrying pesticides can move into the drains. Cultivations will help to break up the large cracks and reduce the direct passage of water carrying pesticides into drains. If soils are cracked wait until they have re-hydrated and cracks have sealed before applying pesticides.

Dry Soils – Risk of pesticide movement through soils that are dry but not cracked is lower. If soils are very light and heavy rain is expected delay application until the rain has passed.

Saturated Soils – Saturated soils are more likely to have run-off problems, especially along wheelings, resulting in the movement of pesticides off the field. Wait until drains have stopped flowing before applying pesticides. If heavy rains are forecast delay application.

*Soil structure and sub-soiling

Soil structure is often damaged if soils are worked when they are too wet; check for poor soil structure, compaction and pans and remedy with appropriate timely cultivation and/or sub-soiling.

Sub-soiling

Deep sub-soiling and mole draining can improve soil structure and drainage by cracking soil pans, but can create large cracks which increase pesticide losses from the field (by-pass flow). Use a spade to check if there is a pan and its depth. If there is no pan do not sub-soil; if there is a pan cultivate just below the pan.

Filling and Cleaning

Organise filling and cleaning to prevent point source pollution

- Choose formulations and packaging designs that minimise the risk of spills and splashes and ease container cleaning and disposal.
- Remember not all pesticides are applied as sprays. In particular, take great care when applying slug pellets (see later), nematicides and treated seed.
- Check application equipment is in good working order. Use the National Sprayer Testing Scheme (NSTS) and operator checklist.
- Mixing and handling is best done on an impermeable surface where drainage is collected and drained to grass/soil (apply to vegetated land in line with a groundwater permit) or via a lined biobed. (Subject to agreement from your local environment agency).
- Do not use the field entrance as a filling point if it is adjacent to a watercourse or to any area, such as a road, track or other feature, which could channel run-off water to a watercourse.
- Use a bowser or separate storage tank and ensure the water supply is connected via a double check valve. Never take water direct from the mains, troughs, watercourses or ponds.
- Never leave application equipment unattended whilst filling.
- Check for drips and leaks before leaving the mixing area.
- Fill using the induction bowl or closed transfer system where available.
- Pressure or triple wash containers and drain into the induction bowl. Rinse seals and lids over the induction bowl. Keep any cardboard clean.
- Store empty containers safely and upright after use. Follow disposal contractor's advice on segregating clean packaging material and ensure all packaging materials including seals and lids are correctly disposed of/recycled.

Apply carefully to protect water

- Establish at least a 6m grass buffer strip or 5m no-spray zone adjacent to any watercourse (see Grass Buffer Strips earlier).
- Do not spray if ground is waterlogged or frozen.
- Do not apply pesticides if heavy rain is expected within 48 hours of application.
- Avoid conditions where spray drift can occur - use nozzles and a spray quality which reduce drift.
- Do not overspray buffer zones & watercourses.
- Spray headlands last to avoid driving over sprayed area and picking up mud and pesticides on tyres.
- Spray tank washings on to the crop or target area.
- Wash the outside of the sprayer before leaving the field.
- Clean mud from tyres before leaving the field, keep tyres as mud-free as possible, as mud on tyres can carry pesticides out of the field.
- Ensure all cleaning activities take place away from watercourses.