Better Training for Safer Food
Initiative

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BTSF

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Lecture 7

Consumers, Health And Food Executive Agency

European Commission

Minimisation of side effects of PPPs for the environment

Consumers, Health and Food Executive Agency (CHAFEA)

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Lecture 7

BTSF TRAINING

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Consumers, Health And Food Executive Agency

Minimisation of side effects of PPPs for the environment

Comparative assessment of plant protection products at user level;

Emergency actions to protect human health and/or the environment, e.g. in case of accidental spillage, contamination, or extreme weather events that would result in pesticide leaching risks

Special care of protected areas established under Art. 6 and 7 of Directive 2000/60/EC

Comparative assessment: the substitution concept

When an active substance is identified as a candidate for substitution, products containing that active substance will have to be subject to a comparative assessment at the time of authorization

Harmonised classification is a key element in the exclusion criteria and therefore for the assessment of whether an active substance is a candidate for substitution.

ECHA Authority trhough RAC Committee is the mandated body for developing an harmonized classification for substances

Active substances which are candidates for substitution

The criteria are based on the intrinsic hazardous properties in combination with the use. An active substance will be considered as a candidate for substitution if any of the following criteria are met:

It meets at least one of the exclusion criteria (CMR, ED,PBT, etc.).

It is classified as a respiratory sensitiser.

Its toxicological reference values are significantly lower than those of the majority of approved active substances for the same product-type and use (ADI, ARfD, AOEL….)

It meets two of the criteria to be considered as PBT.

It causes concerns for human or animal health and for the environment even with very restrictive risk management measures (ex. Bees).

It contains a significant proportion of non-active isomers or impurities (difficult to assess)

Comparative assessment: the aim

The aim of substitution and comparative assessment is to reduce risks by gradually replacing products containing candidates for substitution substances by methods and products of lesser concern where benefit is evident.

Hence, it is not considered relevant to apply substitution in cases where the difference in anticipated risk between products is only marginal, nor in cases where it cannot be demonstrated that substitution does not present significant practical or economic disadvantages for agriculture, nor in cases where effective resistance risk management would be compromised, nor in cases that would have adverse consequences on minor use authorisations

Comparative assessment: main concepts

The concept of comparative assessment and substitution in Regulation (EC) No 1107/2009 was introduced with the purpose to reduce risks.

Comparative assessment of products containing substances under consideration at European level for substitution by products containing
less hazardous active substances or
by non-chemical prevention or
control methods taking into account, among those:

- Sustainable production of the crop concerned
- Control possibilities for quarantine pests
- Control possibilities for emerging pests
- Need for diversity of products to minimize impacts on water quality and biodiversity

Comparative assessment: main concepts

So, the main concept is the replacement of a product, which contains a candidate for substitution substances by methods and products of plant protection of lesser concern in order to benefit the protection of human or animal health and the environment while minimising the economic and practical disadvantages for agriculture.

In comparing two PPPs it is generally likely that both PPPs have obvously the same mode of action and result in the same or similar controlling effect on the target.

Differences in effectiveness, e.g. indicated by differences in level, consistency and longevity of control, and where relevant yield or quality, provide a good basis for comparison but limitations in the use according to the label (e.g. number and timing of applications, buffer zones, etc.) of the alternative also need to be taken into account.

Comparative assessment: options

Usually, candidate product has broad spectrum compared with alternative and substitution may lead to pest problems for which the use is not registered on the label.

In this case, it should be considered whether the candidate product is essential within an established IPM system.

The risk of resistance can be analyzed based on Resistance risk analysis.

The impact on a risk management strategy in the situation that a plant protection product is subject to substitution should be assessed.

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Identification of candidates

In a first step, the identification whether the product contains a substance identified as a candidate for substitution or not should be performed.

In exceptional cases, optional comparative assessment may then be performed also when the product does not contain a candidate substance, if a non-chemical control or prevention method exists for the same use and it is in general use.

Chemical methods should therefore be compared with corresponding non-chemical control (e.g. biological and climatic control) and prevention methods such as crop rotation and mechanical weeding.

The agronomic assessment

After initiation of a comparative assessment is to define the use(s) of the candidate product.

When these have been specified, alternatives should be identified against which the comparative assessment would be performed.

Chemical as well as non-chemical control or prevention methods should be considered.

The comparative assessments of efficacy (effectiveness, crop safety, and risk for resistance), practicability, economical disadvantages, alternative measures, and effects on minor uses should be taken into account.

If the conclusion of the assessment is that substitution is not appropriate in view of agronomic considerations no further assessment is needed.

Comparative assessment for health and the environment

The first step of the comparison for health and the environment is intended to clarify, based on a focused assessment, whether a potential for substituting a candidate product actually exists and should be further explored.

Different approaches may be followed, depending on the availability of e.g. national data bases on risks and risk mitigation measures.

If most of the exclusion criteria are based on hazard, the comparative assessment would also take risk assessment into account, also according to appropriate risk mitigation measures.

As a second step of the comparison for health and the environment, it is necessary to take into account the complete risk profiles of the candidate product and the potential alternative.

Comparative assessment for health and the environment

A prerequisite is that the technical formulation of the product "is such that user exposure or other risks are limited as much as possible without compromising the functioning of the product".

The easiest way to determine this is perhaps in cases where different technical formulations already exist on the market with the same active substance.

The concept of comparative assessment and substitution may therefore in certain cases also play a part in the possibility for risk reduction.

Comparative assessment: agricultural difficulties

Practical or other disadvantages including for example:

- lack of labour availability for hand weeding,
- insufficient land available to permit sufficiently long rotations to enable pest,
- weed or disease management through crop rotation,
- versatility of alternatives

should be considered.

Other methods may differ considerably from the application of the candidate and limit the feasibility of the alternative.

Consider the need and acceptability of use of additional plant protection products or alternative measures to control additional pest problems.

Comparative assessment: efficacy options

Assessing comparability regarding efficacy, a checklist should include:

- Are the alternatives for controlling the target organism (or regulating plant growth) in each target crop to the candidate product already exisisting ?
- Is the effectiveness of the alternative comparable with the candidate product for that use?
- Is the crop safety (including effects on adjacent crops, succeeding crops, taint or
- transformation processes) of the alternative comparable with the candidate product for that use?
- Will substitution of the candidate product by the alternative lead to pest problems for which there are no acceptable mitigation possibilities ?

Will substitution of the candidate product by the alternative lead to disruption of established IPM systems or have a negative impact on organisms beneficial to crop protection for which there are no acceptable mitigation possibilities?

Use of adjuvants could help?

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Comparative assessment: resistance

It is recommended that in a low resistance risk situation a sustainable resistance management strategy includes at least two modes of action.

However, in case there is evidence of a medium risk of resistance of one or more PPPs or a medium risk of resistance in the target organism, at least three modes of action are recommended.

In case there is evidence of a high risk of resistance of one or more PPPs or a high risk of resistance in the target organism, at least 4 modes of action are recommended.

Current resistance situation should be considered when evaluating the required number of mode of actions.

In considering the effect of substitution for a resistance management strategy other factors of inherent risks (e.g. target site resistance versus metabolic resistance, cross resistance) or agronomic risks should be taken into consideration.

Comparative assessment: risk of developing resistance

Assessing comparability regarding resistance, a checklist should include:

- Does the target pest show a high or medium inherent resistance risk ?
- Is there a product or products within the same Mode of Action (MoA) group authorized for use against the target pest?
- Does the candidate exhibit negative cross-resistance in the target pest(s)?
- Given the available alternatives (chemical and non-chemical), is the candidate an important component of the resistance management strategy for the target pest and for other pests in the crop not themselves subject to the comparative assessment?

Comparative assessment: economic options

The EU regulation defines significant economic disadvantage to the user as a major quantifiable impairment of business activity leading to an inability to control the target organism.

A clear criterion should be established to decide whether it concerns a considerably more expensive pest control or not.

For example, the alternative leads to a substantive increase in production costs to obtain the same yield value.

It should be remembered that economic disadvantage with a non chemical method may need to be considered over more than a single year on a multi-period base.

Comparative assessment: considerations about alternatives

Are there significant practical or other disadvantages resulting from the use of the alternative if the candidate is no longer available, a possible checklist is:

Is candidate product authorized for minor uses (on-label or off-label)

Is substitution of candidate product on a major crop anticipated to lead to unsustainable control of pests on a minor crop

Is gaining pest control with the alternative(s) considerably more expensive than the use of the candidate

Are there any wider consequences for maintaining effective crop protection, including the security of future pest control that might influence the decision of making a substitution

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Comparative assessment: possible application in minor uses

Unsustainable control, defined as the inability to ensure effective control without adverse practical or economic effects on crop production, or unacceptable resistance risk to the targets controlled, of pests in minor use should be clearly substantiated, describing the importance of the production associated with the minor use and the absence of effective alternatives for the candidate or the lack of adequate chemical diversity of products available for minor use.

Analysis of the efficacy of pest control and assessment of resistance risks may be extrapolated from data on relevant major uses.

Emergency procedures

Any emergency action plan should consider how to protect the human health and the environment when dealing with any exposure or spillage.

Emergency procedures:

Anyone who uses pesticides professionally (that is, as part of their job) must be trained in emergency procedures (obligatory for licensing) and must have, and understand, their own action plans.

These emergency action plans should be kept up to date to cover new equipment or new ways of working and new product used.

Many product labels will have specific advice on what to do if you are contaminated or there is a spillage or fire.

This information is always on the manufacturer's material safety data sheet (SDS), which you can get when you buy the product.

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The Safety Data Sheet

The safety data sheet is a document that provides information about the properties, risks and safe use of a substance or mixture in industrial or professional activities.

Provisions regarding safety data sheets are laid down in Article 31 of Title IV 'Information in the supply chain' of the REACH Regulation (EC) No 1907/2006, amended regarding Annex II to the REACH Regulation 'Requirements for the compilation of safety data sheets' since 20 June 2010.

The supplier (manufacturer, importer, downstream user or distributor) responsible for placing a chemical substance or preparation on the market must compile a safety data sheet for chemicals intended for industrial or professional use and submit it to the recipient of the chemical.

A safety data sheet need not be supplied where dangerous substances or preparations offered or sold to the general public are provided with sufficient information to enable users to take the necessary measures as regards the protection of human health, safety and the environment, unless requested by a downstream user or distributor.

The SDS (cont'ed)

The safety data sheet must be:

- dated and contain the standard headings in the specified order;
- updated as soon as new information which may affect the chemical's properties or use becomes available;
- supplied in the official language(s) of the Member State where the substance or mixture is placed on the market;
- provided free of charge on paper or electronically.

Any updated versions of the safety data sheet must be provided to all former recipients to whom the chemical was supplied within the preceding 12 months.

Art 45 CLP Regulation

MS shall appoint body or bodies responsible for receiving information on mixtures classified as hazardous on the basis of their health or physical effects

Appointed bodies shall keep information confidential

Information may be used for medical purposes, in particular in event of emergency

Where requested by MS, for statistical analysis to improve risk management measures, if needed.

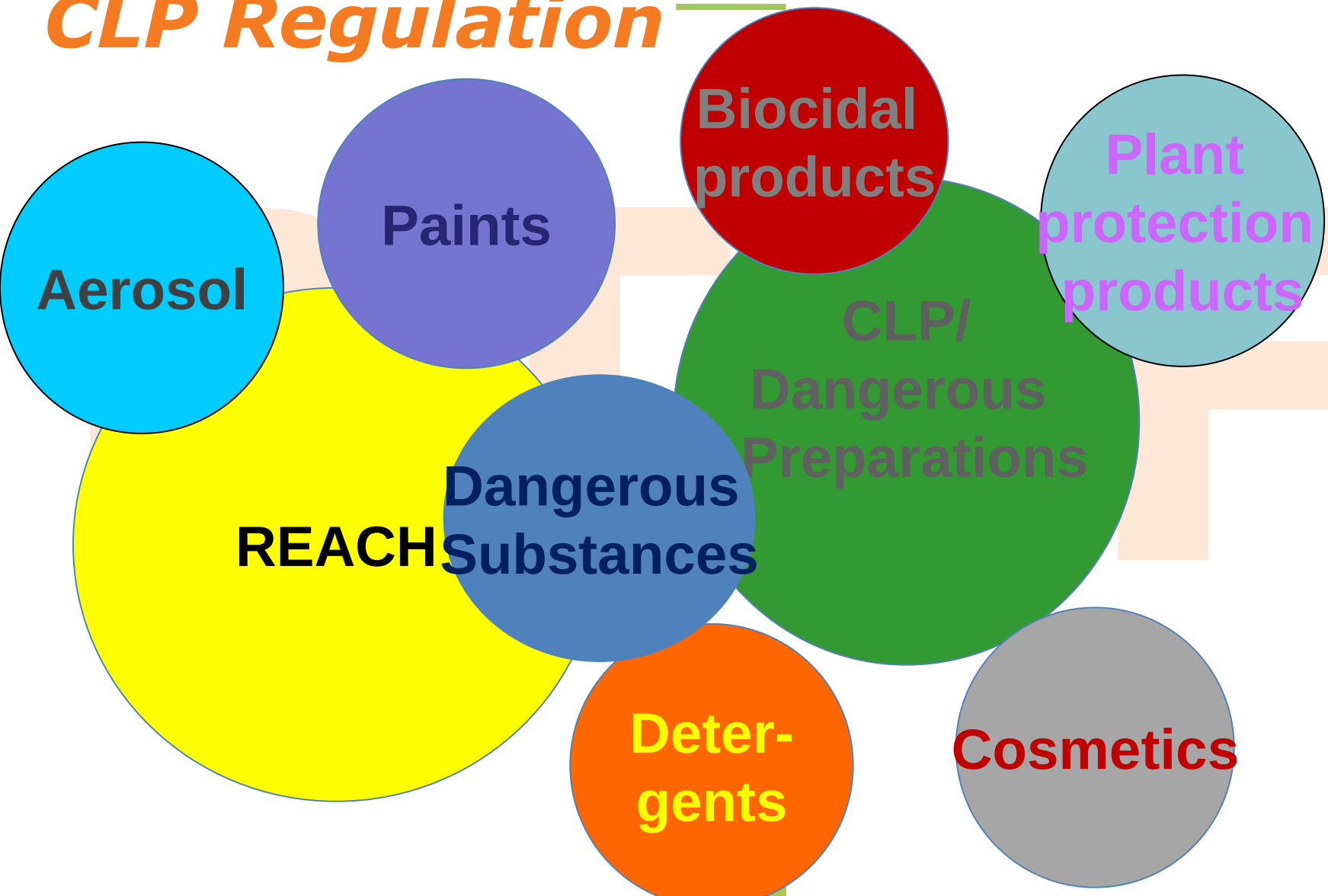
Provisions in Art. 45 of CLP similar to Art. 17 DPD

Regulation on Plant Protection Products (Regulation (EC) No 1107/2009)

Article 68 :

General obligation to adopt a Regulation which amongst others "shall also contain provisions concerning the collection of information and reporting on suspected poisonings"

CLP Regulation



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Personal contamination

Exposure can occur through skin, eyes, breathing or swallowing: any emergency action plan should consider how to protect the human health and environment when dealing with any exposure or spillage. If someone feels unwell when or after using pesticides should:

Stop work and, if necessary, call for medical help immediately.

Prevent further exposure. Use appropriate personal protective equipment when helping a contaminated person or handling contaminated surfaces.

Move the casualty away from the source of contamination and remove all their contaminated clothing.

Wash contaminated skin or hair thoroughly with plenty of clean water.

If eyes are contaminated, immediately flush them with plenty of clean running water. Then cover the eye with a sterile eye pad or similar lint-free dressing.

If someone has swallowed a pesticide, do not try to make them vomit (be sick) unless the product label recommends this. Make the casualty rest and keep them warm.

If the casualty is unconscious, check their breathing and pulse and put them in the recovery position. If there are no signs of breathing or a pulse, begin CPR (cardiopulmonary resuscitation), if necessary, using a method of artificial respiration which will avoid the risk of you swallowing or breathing in the pesticide.

Give the doctor or hospital a copy of the product labels and material safety data sheets. If this not possible, give them details of the active ingredients and the product names and make sure to report the incident.

Suspected animal poisoning

If you find a creature or animal which you suspect has been affected by being exposed to pesticides, or if you find spilt pesticide or unprotected baits, you should:

Get the animal away from the source of contamination, taking care not to be contaminated yourself. If necessary, wear appropriate personal protective equipment.

Take the animal to a vet or contact a vet immediately, keeping the animal sheltered and resting.

If possible, give the vet the product labels. Otherwise, give the name of the products and their active ingredients.

Phone the local authority for an incident involving any : this means not only wild mammals, birds and pets but also bees or other insects, worms and other creatures.

Do not touch any dead animals, unprotected baits, pesticides or containers, and never try to unblock bait boxes

If it is safe to do so, cover any dead animals or pesticides until they can be disposed of or safely removed to be analysed.

Take into account the related product label instruction care

Protection of the human health : PPE

Personal protective equipment (PPE) is the least effective risk control measure providing a barrier between the worker and the hazard.

The personal protective equipment for the work with PPPs includes:

Head protection.
Eye and face protection.
Respiratory protection.
Protective gloves.
Protective clothes.
Protective footwear.

Protection of the human health : PPE (cont'ed)

The main requirements for the use of PPE are following:

Protective equipment should be in a good condition and fit well.

Filter or cartridge should be changed at the specified time.

Gloves must be protective, fit the hands comfortably and be flexible enough to grip PPP containers firmly.

Gloves and boots should be washed before removal in order to avoid self-contamination.

The clothes should be resistant against the PPPs used and washable.

Garments should be washed separately from other clothes.

Protective clothing should be stored in a clean, dry and well-ventilated room separated from other clothing or living accommodation.

Contamination of work clothes through/by protective equipment should be avoided.

Personal protective equipment should be used even on a hot and humid day.

Generally, the Safety Data Sheet of a PPP may be helpful in selecting the proper PPE.

Protection of the human health:practical rules for PPPs storage

Access to a plant protection products store should always be restricted.

Only people trained to handle these types of products should be allowed to enter the store, and should only do so briefly.

Clearly printed signs should be affixed at the entrance, visible from the exterior, indicating that it is a plant protection products store.

The entrances to the store should be kept locked and be marked with the following safety signs: 'keep out', 'no naked flames' and 'no smoking'.

The ventilation windows should be barred to prevent intrusion.

There should be no potential fire ignition sources in the store and the electrical installation should be conform to current certification regulations.

It is essential to keep stores clean and tidy and to ensure that workers who have access to them understand the health and safety rules to be observed.

Hygiene and the use of personal protective equipment (PPE) are essential for all who potentially come into contact with plant protection products.

Neither the place where the PPE is stored nor the washing facilities should be in the same compartment as that used for storing the products.

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Storage rules

Plant protection products should be stored in such a way as to maintain the quality of the products and ensure the safety of workers who have access to them.

The products should be stored exclusively in their original containers and in a position that enables them to be readily identified from their labels. It should be stressed that it is only permitted to store and use registered and approved products.

Only the quantities needed for plant protection purposes on the agricultural holding should be stored, and the oldest product in the store should always be used first.

Solid products should be stored on shelves above liquid products. Doing so there is no liquid dropping on solids in case of leakage.

The plant protection products store should also be used to store, all the utensils used in measuring and weighing products, such as measuring devices, pails, etc.

Ensure that all utensils are cleaned before stored. The store is also an ideal place to store empty containers in purpose-designed bags, for later delivery to empty container collection schemes.

Where there are seeds treated with plant protection products, they can also be kept in this store until sowing, to prevent animals coming into contact with them.

Storage : practical rules

A plant protection products store should be used exclusively for that purpose and be separate from other buildings.

10 metres is regarded as the minimum distance between a plant protection products store and another building.

Where this is not possible, the walls separating it from other buildings should be solid and not allow any internal communication with other structures.

The site of the store should be not less than 10 metres from any watercourse, well, drainage ditch or spring, and should never be situated on steep slopes or in places at risk of flooding. The store should always be built above ground.

Cellars are inappropriate places for storing plant protection products: avoid their use!.

The materials used in the construction of stores may be of various types but they must be robust, fireproof and easy to clean: concrete, brick and stone are the recommended materials. The floor must also be impermeable to liquids with drainage possibly.

The storage : practical rules (cont.ed)

The roof, as well as being incombustible, must provide sufficient thermal insulation to prevent extreme temperatures inside the store.

This aspect, combined with efficient ventilation, normally by means of openings in the upper and lower part of the walls, will ensure adequate renewal of the air inside the store.

An important aspect to be borne in mind in the construction of the store is its ability to retain any spillage or firefighting water.

The possible solutions will depend on the local conditions, but in the majority of cases on farms, constructing the floor a few cm. below soil level will be a good solution.

In other cases, creating a spill pond by waterproofing the floor and the lower parts of the walls and constructing ramps at the doors to prevent the loss of liquid to the exterior may be an alternative. The spill pond should have a capacity of 110% of the volume of liquids stored.

Lighting should be sufficient to read the labels on the products without difficulty. Where there are shelves, they should be made from washable, non-absorbent and non-inflammable materials.

A storage checklist

Are the plant protection products stored in separate compartments used exclusively for this purpose (separately eg by fertilizers, pesonal protective clothing, etc)?

Are the plant protection products stored in a solidly built structure?

Is the storage place kept locked?

Is the storage place protected against extreme temperatures?

Are there signs prohibiting smoking and naked flames?

Does the storage place have constant and sufficient ventilation to prevent the accumulation of hazardous vapours?

Is the storage place sufficiently well lit to enable the labels of the products to be read?

Are the storage shelves made of non-absorbent, non-inflammable materials, e.g. metal?

Are products in powder or granule form stored on shelves, above liquids?

Is the storage place provided with equipment for dealing with spillages (inert materials such as sand, waste bin and plastic sacks) in a clearly marked place and ready for use?

Is there an eye wash bottle and water for decontaminating operators in the event of an accidental spillage, and a clear procedure, including emergency telephone numbers (toxicological centre, police, ambulance, hospital, fire service) and a first aid guide?

Are all items mentioned in the above point regularly updated and clearly signed?

Are there clean bathrooms/showers and washbasins at the workplace?

Is an inventory kept of the products held and updated regularly?

Protection of the human health : personal hygiene

Personal hygiene is extremely important when handling PPPs as may have a substantial impact on the workers exposure.

General requirement is that during work workers should not touch their face or other bare skin with dirty hands or gloves.

Persons working with PPPs have at least to wash face and hands before eating, drinking, smoking or going to the toilet.

Special attention to personal hygiene must be paid during the worker training.

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Protection of the human health . handling, mixing and loading

The preparation of the mixture calls for special precautions on the part of the operator. In addition to handling concentrated, undiluted products, there is a range of operations such as mixing and filling tanks that call for careful attention.

Preparing the mixture is an operation involving a high level of responsibility, which should only be carried out by trained personnel.

It is essential to ensure that there are no people or animals in the vicinity of the place where the mixture is being prepared and to take every precaution to ensure that no errors or accidents occur that might have negative effects on the quality of the treatment, or on the operator or the environment.

Before preparing the mixture, there are some basic rules that should be remembered:

Read the labels and follow the instructions;

Wear suitable personal protective equipment;

Check that the application equipment to be used is calibrated and working properly;

Check that the first aid equipment and emergency telephone numbers are within easy reach;

Calculate the quantity of the mixture required for the crop protection treatment in order to avoid remaining.

Precautions when preparing the mixture

Open the container by holding it vertically and empty it carefully so as to avoid splashing and/or spills; when emptying a large container (over 5 L/Kg), take care to allow the air to circulate while pouring the product. This allows the product to flow freely, preventing splashing.

Keep the container away from your body so as to reduce the likelihood of contact with the product;

Measure the product correctly.

Do not estimate the quantity, because with some products a small difference in the quantity used can mean that the expected result is not obtained.

After measuring the quantity of the product to be used, close the container to avoid spills.

Rinse the utensils used to measure the product and empty this rinsing water into the sprayer tank.

Always place containers and measuring utensils on even, stable surfaces to prevent them falling and spilling their contents.

Where products are applied by tractor, it is essential to have gloves to hand in case it is necessary to repair the application equipment (e.g. unblocking nozzles, etc).

If the operator is the same person who prepared the mixture, he should wash the gloves he used, take them off, place them on the tractor and only after that carry out the treatment.

Preparation Checklist

Safety during the preparation of crop protection product mixtures is crucial. It is recommend to follow the checklist below before beginning the task.

Is the application equipment clean, in good condition and free from spills?

Is there is a roll of Teflon tape to repair any tube that leaks?

Is the personal protective equipment (PPE) clean, in good condition and ready to be worn by the operator who is preparing the spray mixture?

Are the utensils for measuring the crop protection products clean and kept in the place where the spray mixture is prepared?

Is there is a clean water nearby for rinsing hands and eyes in the event of accidental contamination?

A first aid box nearby?

Is there water/a shower available near the mixture preparation site for decontaminating the operator in the event of an accidental spillage?

Are there emergency telephone numbers (police, ambulance, hospital, fire service, PCs) and a first aid guide within easy reach, and are they regularly updated and clearly signed?

Are there facilities for the triple rinsing of containers?

Are empty containers (after being placed in sacks ready to be collected) stored in the crop protection products store?

Mixing procedure

Calculate the quantity of water and product to be used that both correspond with the area to be treated and that leftover spray is avoided.

Place half the water required in the sprayer tank, stir, add the product(s) and then add the rest of the water, stirring continuously.

If necessary to mix several products, solid formulations (Wettable Powder – WP, Water Dispersable Granules – WG) should be added first to the sprayer tank until a homogeneous mixture is obtained, and liquid formulations should only be added afterwards.

Check that the products are compatible, that the desired mixture is recommended and that a homogeneous mixture is achieved before adding the next product.

Rinsing of containers

After the product has been completely used up, the empty containers should be triple rinsed following this procedure:

Empty the contents of the container completely into the sprayer tank.

Quarter fill the container with water.

Replace the lid and shake vigorously for a few seconds.

Empty the water into the sprayer tank.

Repeat steps 2 to 4 two more times; make the container unusable, preferably without damaging the label and place it in the bags designed for collecting used containers.

Triple rinsing of containers only applies to rigid containers with a capacity/weight of 25 L/25 Kg which contained crop protection products intended for the preparation of spray mixture.

Rinsing containers yields the following benefits

Economic: An unwashed container could contain up to 5% of the product.

Efficacy: By rinsing containers all the product is used which increases the efficacy of the treatment.

Safety: A well-rinsed container will not contain residues, thereby avoiding the risk of poisoning and other accidents.

Environmental: A triple rinsed container will not contaminate the environment. Non-rigid containers of any capacity and rigid containers with capacities between 25 L/25 Kg and 250 L/250 Kg should be completely emptied of their contents, without prior rinsing.

Container disposal recommendations

Never dispose empty containers carelessly.

Never throw away and dispose empty containers:

In fields (cultivated or uncultivated).

In rivers, streams or drainage ditches.

In public refuse bins.

Never burn crop protection product containers.

Never reuse empty crop protection product containers for any purposes as they may contain product residues.

Practices that were accepted until a few years ago, such as burning, burying or disposal in public refuse bins are now incorrect.

Ask your dealer or the crop protection industry about the empty container collection scheme in place.

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Leaking containers

For leaking containers, do one of the following:

Use the contents immediately.

Pour the contents of the damaged container into an empty container that originally held the same product. The container should be in good condition and with an undamaged label.

Put the leaking container into a suitable larger container clearly labelled with the product name and the hazard classification and risk and safety phrases shown on the product label.

Never put any pesticides into an empty food or drink container.

Dispose of all contaminated material safely and legally (for example, through a licensed waste-disposal contractor). This includes getting rid of any equipment which you used to clean up the spillage and which cannot be decontaminated safely.

Protection of the human health: spillage

Where operators put on PPE in the place where it is stored, there should be a separate locker/compartment for storing their ordinary clothes.

The existence of a chemical powder extinguisher is also recommended.

The store should be provided with equipment for dealing with spillages: sand, strong plastic sacks, buckets, brush and dustpan.

Cleaning up spillages in a plant protection products store should be done with care: immediately contain the spillage and ventilate the store well.

Afterwards clear up the spilled product and clean the site.

Where the spilled product is a solid, an industrial vacuum cleaner fitted with a filter may be used, or if this is not available, scatter damp fine sand on the spill and use a brush and dustpan to clear it up.

In the case of spilled liquids, an inert material (e.g. fine sand) should be used to absorb it and clear it up.

The substances resulting from spillages should be stored in plastic sacks for later disposal.

Spillage

Never hose down spilt pesticide or allow it to enter surface water, ditches, drains or soakaways.

It is good practice to have a diagram of drainage systems available for emergencies.

If you spill any pesticide as a concentrate, ready-to-use product or spray solution, no matter how small the spill is, you should do the following:

Keep people and animals away from the affected area until the situation has been dealt with.

Avoid becoming contaminated yourself.

Wear appropriate personal protective equipment.

Immediately prevent further spillage using, for example, an emergency folding pool.

Spillage (cont.ed)

Contain the spilt material. as a priority, keep the contamination away from surface water, ditches and drains.

Do not contaminates any water, either directly or through a drainage system or contaminates a large amount of soil.

You may need to tell neighbours or people using the water downstream of the spill.
Tell authorities if the spill enters a sewage system.

For spilt liquids, put absorbent material, such as cat litter or dry sand, around the spill and use the same material to soak up the spillage. the material you use must be 'inert'. this means it must not cause any chemical reaction.

Sweep up any solids and material used to contain liquid spills. Sweep up as gently as possible without raising dust. Then sprinkle the area with inert absorbent material and sweep gently again.

Local contamination

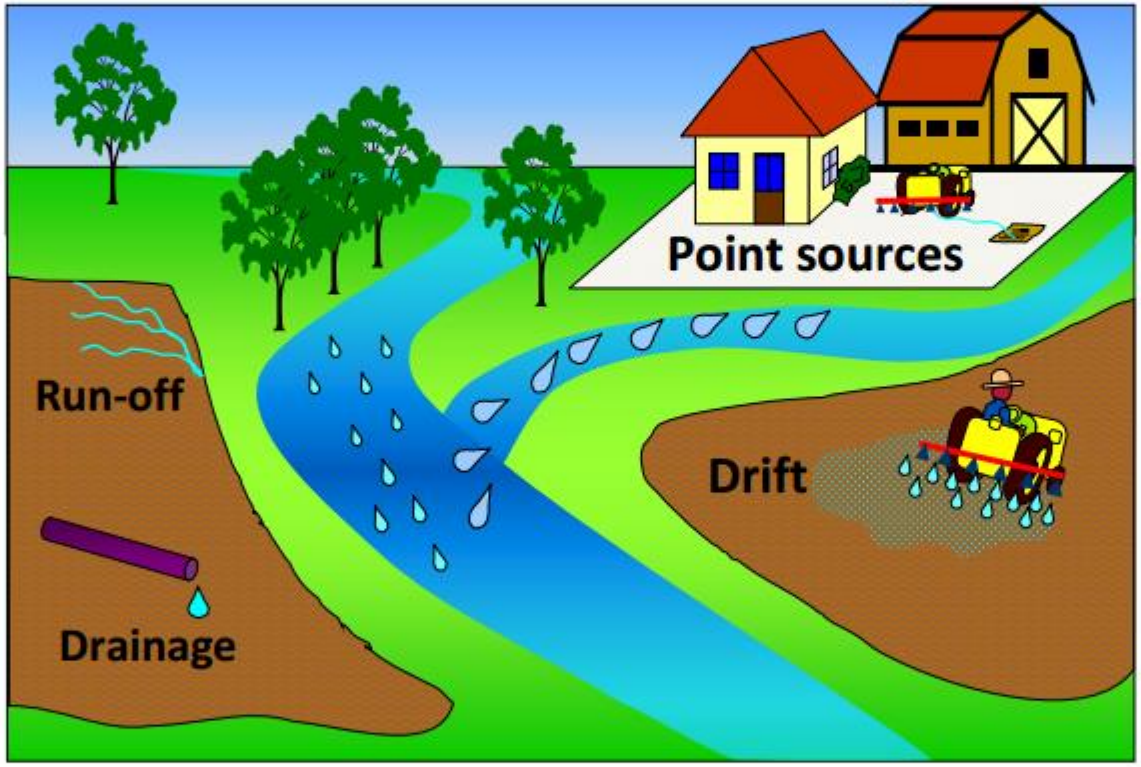
In order to prevent local contamination take into account all the possible contamination sources.

Local contamination for soil, air and water should carefully consider all the steps involving PPP from sale to enduse:

Transfer form retailer sale to farm
Transfer from farm to field
Storage
Mixing and loading procedure
Filling tanks and machine
Mixture distribution
Residual mixture management
Machinery and equipping cleaning at the end of treatment
Disposal of containers
Good practices in preventing local contamination during handling and using PPP

Main entry routes of pollutants to surface water from agriculture

Train Operators to Promote Practices & Sustainability (TOPPS Project)



Diffuse sources

> 50 % Point source

Protection of the environment: environmental risks

Leaching risk:
Capability of penetration and possibility of contamination of the groundwater

Runoff risk:
Water movement on or under the surface or under superficial ground layers.
It is generated by raindrops or irrigations
It cause transfer of substances (ruscellation) and solid particles (erosion)

Drift risk:
Movement within atmosphere from treated area to non target sites

- Ground sediments (endodrift)
  Atmospherical drift (esodrift)

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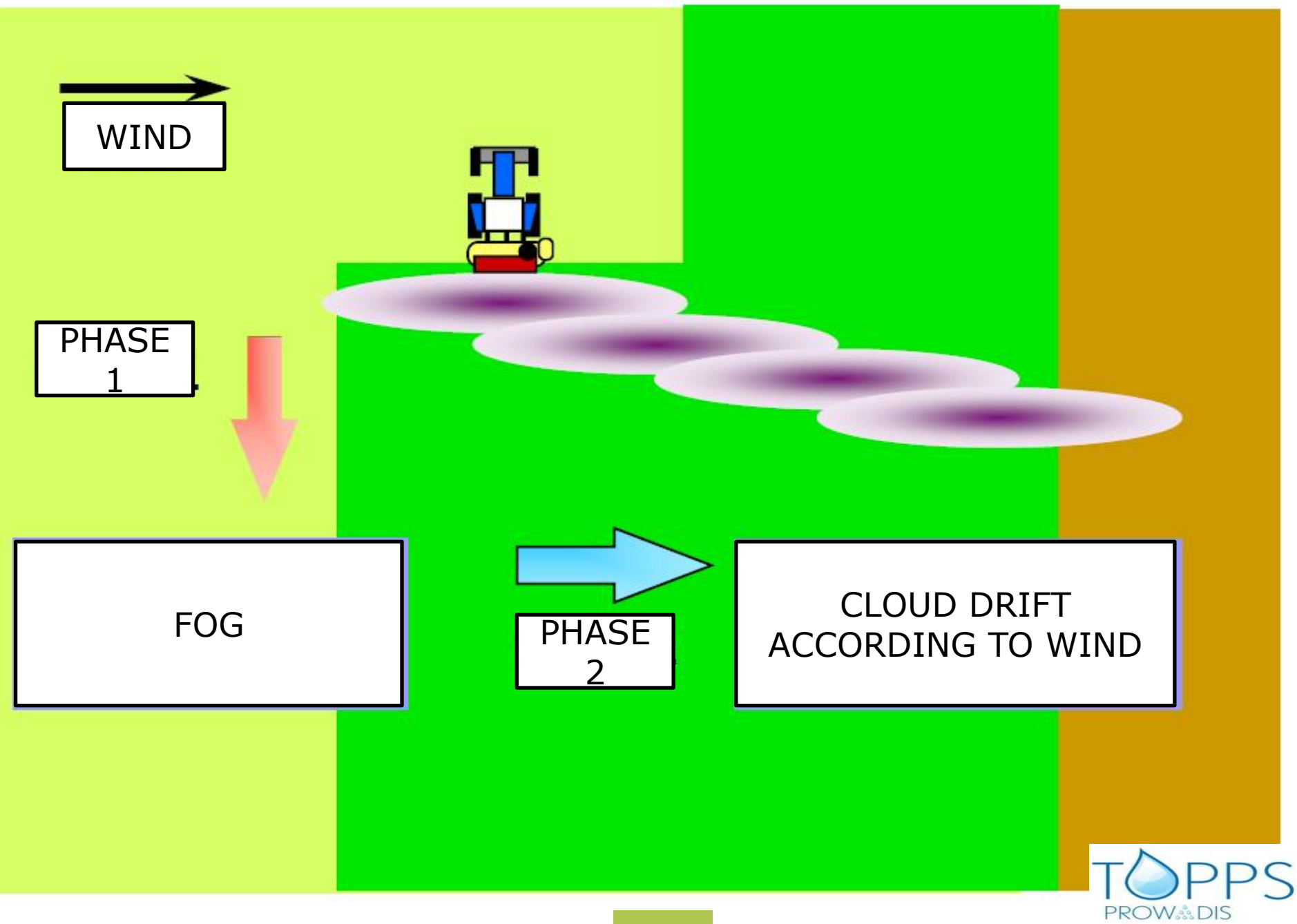
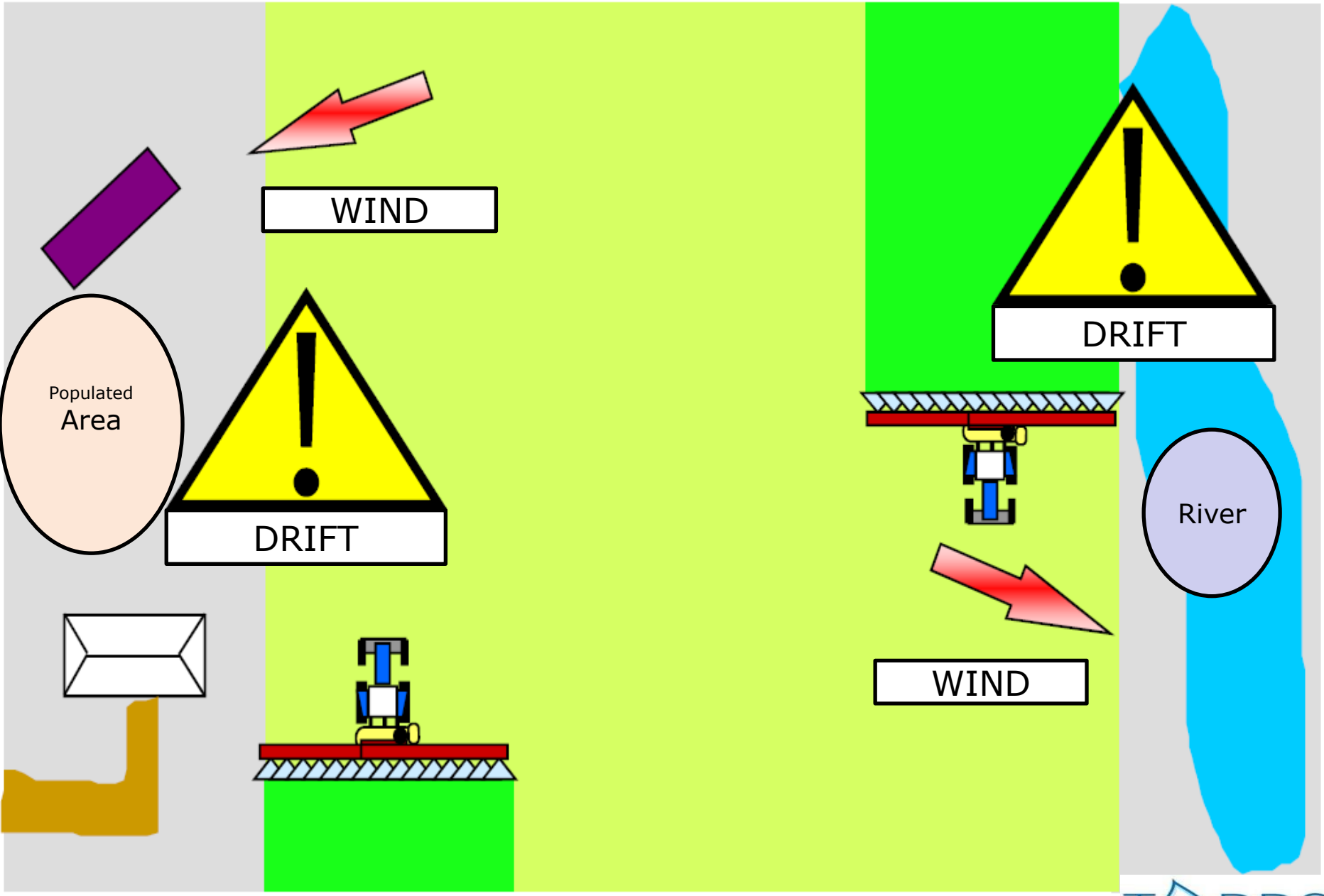
Factors influencing drift

Meteo conditions (wind speed, wind direction, temperature, humidity)
Drop sizes (Numeric Median Diameter(NMD) and Volumetric Median Diameter (VMD)
Time of drop evaporation
PPP mixture (formulated product+ water + adjuvant)
Type of distributing machine
Type of nozzles and exercise pressure
Regulation of distributing machine
Vegetative period


WIND
PHASE 1
FOG
PHASE 2
CLOUD DRIFT ACCORDING TO WIND


Sensitive crop



TOPPS
PROWADIS

Fire

If you discover a fire that involves pesticides, you should do the following:

For small fires which you can deal with quickly, safely and without causing a significant risk of exposure to fumes or other material produced by burning pesticides, use appropriate firefighting equipment.

In all other circumstances, call the fire brigade and the police, and follow your evacuation procedures. Warn other people who may be at risk (for example, if fumes are blowing in their direction).

Give the fire brigade a complete and accurate list of the products involved and their active ingredients.

Deal with any spilt pesticides resulting from the fire or firefighting activities as described above

BTSF

Directive 2000/60/EC

Directive 2000/60/EC of the European Parliament and of the Council established a framework for the Community action in the field of water policy or the E.U.

The following are key aims of the Directive:

- Expanding the scope of water protection to all waters, surface waters and groundwater
- Achieving "good status" for all waters by a set deadline
- Water management based on river basins
- "Combined approach" of emission limit values and quality standards
- Getting the prices right
- Getting the citizen involved more closely
- Streamlining legislation.

Consumers, Health And Food Executive Agency

European Commission

Directive 2000/60/EC: Art. 6 and 7

European Union with Directive 2000/60/EC establishes a legal framework to protect and restore clean water across Europe and ensure its long-term, sustainable use.

A management plan and a program of measures must be elaborated for every river basin.

Measures foreseen in this plan must aim at:

(a) prevention of aggravation of the situation, improvement and restoration of aqueous systems of ground waters and the fulfilment of the target of their good ecological and chemical situation, as well as the reduction of pollution due to the runoff and emissions of dangerous substances,

(a) (b) the protection, improvement and restoration of ground waters, prevention of their pollution and aggravation of their situation and

(c) preservation of protected areas.

EU respectively tries to achieve a good ecological situation of all water bodies in the Member States by 2015.

The purpose of the Directive

Is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater which:

(a) prevents further deterioration and protects and enhances the status of aquatic ecosystems;

(b) promotes sustainable water use based on a long-term protection of available water resources;

(c) aims at enhanced protection and improvement of the aquatic environment, (d) ensures the progressive reduction of pollution of groundwater and prevents its further pollution, and

(e) contributes to mitigating the effects of floods and droughts.

The purpose of the Directive

Member States shall identify the individual river basins lying within their national territory and, for the purposes of this Directive, shall assign them to individual river basin districts.

Small river basins may be combined with larger river basins or joined with neighbouring small basins to form individual river basin districts where appropriate. Member States shall ensure the establishment of a register or registers of all areas lying within each river basin district which have been designated as requiring special protection.

The European Parliament and the Council shall adopt specific measures against pollution of water by individual pollutants or groups of pollutants presenting a significant risk to or via the aquatic environment, including such risks to waters used for the abstraction of drinking water.

Article 6
Register of protected areas

Member States have provided the establishment of a register or registers of all areas lying within each river basin district which have been designated as requiring special protection under specific Community legislation for the protection of their surface water and groundwater or for the conservation of habitats and species directly depending on water.

The register or registers include all bodies of water identified under Article 7(1) and all protected areas covered by Annex IV.

For each river basin district, the register or registers of protected areas shall be kept under review and up to date continously.

Consumers, Health And Food Executive Agency

European Commission

Article 7
Waters used for the abstraction of drinking water

Member States have identified, within each river basin district:

- all bodies of water used for the abstraction of water intended for human consumption providing more than 10 m3 a day as an average or serving more than 50 persons, and

- those bodies of water intended for such future use.

Member States provide monitoring plans, in accordance with Annex V, those bodies of water which according to Annex V, provide more than 100 m3 a day as an average.

For each body of water for surface water bodies including the quality standards established at Community level under Article 16, Member States shall ensure that under the water treatment regime applied, and in accordance with Community legislation, the resulting water will meet the requested parameters.

Member States ensure the necessary protection for the bodies of water identified with the aim of avoiding deterioration in their quality in order to reduce the level of purification treatment required in the production of drinking water. Member States have established safeguard zones for those bodies of water.

Special care of protected areas

Measures should be set up in order to reduce the risks associated with the use of pesticides in: public spaces; conservation areas; and areas recently treated with pesticides which are accessible to agricultural workers.

Protection of wildlife generally (and not just in conservation areas) from the adverse effects of pesticides is supported and promoted through a variety of measures and mechanisms, including:

- provision of subsidies to farmers who adopt a range of land management practices which benefit wildlife (including buffer zones adjacent to ponds, waters and hedgerows, un-cropped field margins, un-cropped areas for ground-nesting birds, reduced herbicide cereal crops, hedgerow tree buffer strips and in-field beetle banks.

The pesticide regulatory risk assessment process assesses the risk to human health (operators, consumers, bystanders and residents). Where appropriate, risk management measures are imposed so as to mitigate any risk. For example, re-entry levels are set for workers going into treated crops, and there is a specific risk assessment for pesticides used in public places.

Special care of protected areas

Users must:

- take 'all reasonable precautions' to protect or avoid endangering human health when using, storing and handling pesticides;
- confine pesticide applications to the target areas;
- ensure that the amount used and the frequency of use should be as low as is reasonably practicable in specific areas.
- landowners and public authorities to obtain agreement or consult nature conservation authorities before applying pesticides to protected areas identified for he purposes of conservation established under the Water Framework Directive, Sites of Special Scientific Interest, or Natura 2000 sites. In each case an assessment is made of the conservation objectives of the site and potential impact of pesticide use. Agreements to use a pesticide are developed in accordance with guidelines which details alternative and integrated approaches to vegetation management.

The Natura 2000 network

Natura 2000 is a network of protected areas established by the EU across all Member States.

787,767 km^2 (304,159 sq mi) are designated as terrestrial sites and 1,564 km^2 (97,129 sq mi) as marine sites. Overall, 18 percent of the EU land mass is designated.

The Natura 2000 (N2K) network is a European-wide network of protected nature conservation areas that have been established to ensure the long term survival of Europe's most valuable habitats and species, including those that might be endangered.

The establishment of the N2K network by the European Union (EU) fulfils a Community obligation under the UN Convention on Biological Diversity. It is the centrepiece of EU nature and biodiversity policy.

The network is composed of:

Special Areas of Conservation (SACs) - designated by EU Member States under the Habitats Directive (92/43/EEC), and

Special Protection Areas (SPAs) - designated by EU Member States under the 1979 Birds Directive (79/409/EEC).

Member States decide on their own methods and legislation to implement these Directives.

European Commission

MEASURES TO REDUCE RISK FOR THE USE OF PESTICIDES

MITIGATION OF RISK ARISING FROM THE DRIFT

1. Creation and management of a buffer zone untreated.
2. Use of anti-drift nozzles and sprayers systems with anti-drift
3. Hedges and artificial reefs

MITIGATION OF RISK ARISING FROM THE RUNOFF

4. Implementation and management of vegetated buffer zone
5. Using the technique of the furrow.
6. Interventions aimed to reduce runoff of plant protection products due to soil erosion

MITIGATION MEASURES OF RISK ARISING FROM LEACHING

7. Limitation and / or replacement of PF reporting on the label must apply specific mitigation measures for the reduction of leaching

European Commission

MEASURES OF LIMITATION, REPLACEMENT OR REMOVAL OF PESTICIDES

8. Reduce the amount of herbicides used by different enforcement strategies
9. Limitation of use of plant protection products that bear the label must apply specific measures to mitigate the risk to non-target organisms
10. Limitation / replacement / Removal of plant protection products in order to achieve "good" ecological and chemical status of surface water
11. Limitation / replacement / Removal of plant protection products in order to achieve "good" chemical status of groundwater
12. Limitation / replacement / Removal of plant protection products not subject to environmental monitoring for surface water and groundwater
13. Replacement / restriction / elimination of plant protection products for the protection of species and habitats for the attainment of the objectives of Conservation under the Habitats Directive 92/43 / EEC and birds 2009/147 / EC and for the protection of endemic species or at high risk of extinction, of Apoidea and other pollinators

MEASURES FOR THE LIMITATION OF POLLUTION

14. Adoption of systems for the storage and preservation of plant protection products and waste resulting from their use are characterized by high safety standards.
15. Accompanying measures to increase the levels of safety during storage and conservation of plant protection products and waste resulting from their use

ADDITIONAL MEASURES

16. Interventions Complementary with Measure 13 for the conservation of species and habitats protected in Natura 2000 sites and protected areas
17. Training and specific advice for the correct application of the measures
18. Implementation of marketing actions (territorial: basin, sub-basin etc., Natura 2000 and protected areas) - Support for accession to production rules and / or certification of quality products that ensure production methods that meet specific environmental requirements

Refer to:

EPPO Standards

European Commission, 2010 – Links between the Water Framework Directive (WFD 2000/60/EC) and Nature Directives (Birds Directive 79/409/EEC and Habitat Directive 92/43/EEC).

TOPPS Projects :Train Operators to Promote Practices & Sustainability (TOPPS Project)

Fao Guidelines http://www.fao.org/WAICENT/FAOINF

National Action Plans implementing Sustainable Use Directive

Damalas, C. A., Eleftherohorinos, I. G. 'Pesticide exposure, safety issues, and risk assessment indicators', International Journal of Environmental Research and Public Health, No 8(5), May 2011, pp. 1402–1419. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3108117/

WHO – World Health Organization, Pesticides and their application, 2006, pp. 6-8. Available at: http://whqlibdoc.who.int/hq/2006/WHO_CDS_NTD_WHOPES_GCDPP_2006.1_eng.pdf

This action/ training/ seminar is carried out by [contractors name] under the contract no… with the Consumers, Health and Food Executive Agency (former Executive Agency for Health and Consumers).

Contractor name

Contractor contact details

Better Training for Safer Food
BTSF

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L-2920 Luxembourg

Consumers, Health And Food Executive Agency

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Executive Agency

Prepare a 10 points check list identifying:

A) A)Local contamination
B)Preparation procedure
C)Emergency measures
D)Storage/Deposit
E)Spillage

B) if the case, distinguish between farm and sales point