

Health and Safety issues for a safer application of PPP



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ESCAP **75** CSAM
MOVING FORWARD TOGETHER

ANTAM
Asian and Pacific Network for
Training in Agriculture Machinery

**Webtraining on Agricultural Machinery
and Safer Application of Chemicals**

Wednesday
17 November 2021
14:00 - 16:00 GMT+8
Beijing time

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Principles of Risk Assessment for a global of Health and Safety application of Plant Protection Products

Principle of Risk Assessment adapted to Pesticide Application



Take into consideration the global context of the pesticide application :

Spraying machine : importance of testing and quality criteria

Product : safety sheet/label contain H&S informations

Context :

- workers, sensitive areas (well, pond, river)
- wind conditions
- Training / Good Agricultural Practices

Principle of Risk Assessment

A risk is a combination of Hazard Severity & Hazard Probability

Risk probability	Risk severity				
	Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent 5	5A	5B	5C	5D	5E
Occasional 4	4A	4B	4C	4D	4E
Remote 3	3A	3B	3C	3D	3E
Improbable 2	2A	2B	2C	2D	2E
Extremely improbable 1	1A	1B	1C	1D	1E

The sprayer: Identification of hazards



3WF-3A

Exposure when filling

Gazoline

Heat burn

Exhaust Gaz

Weight

Noise



The sprayer: Identification of hazards

3pt Linkage
Lift

Exposure when filling

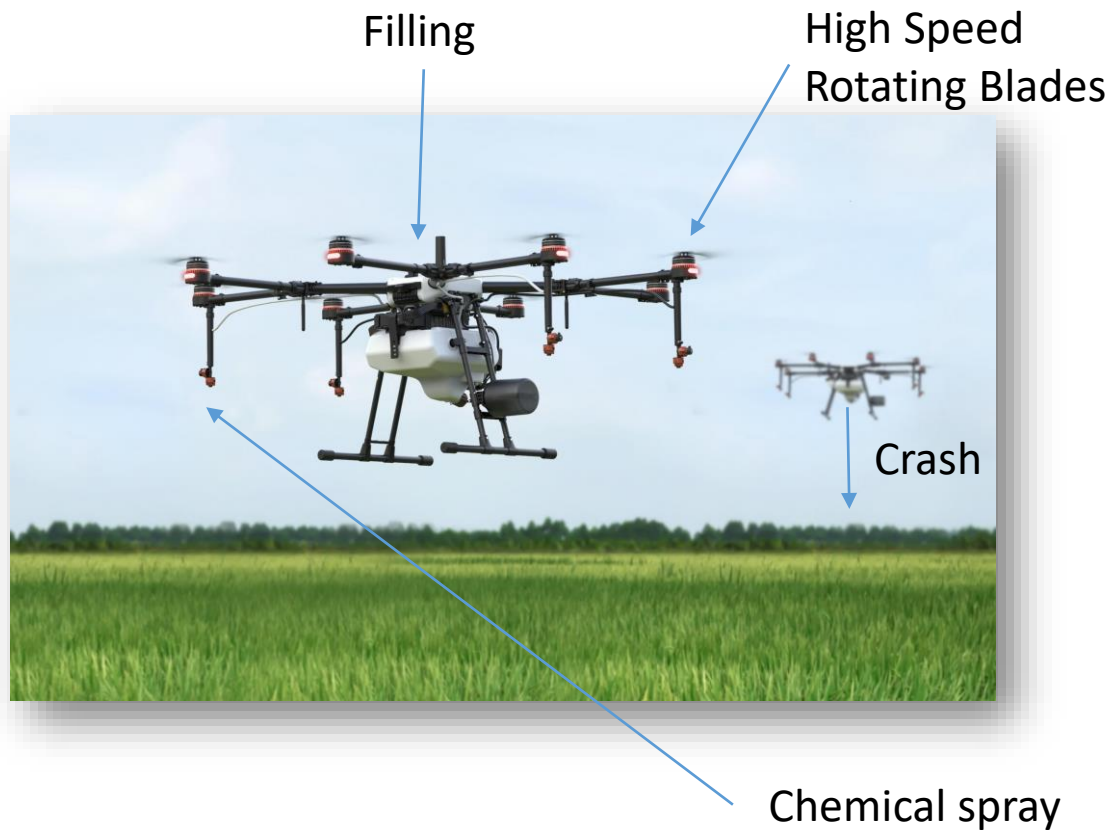
External contamination



Boom folding

Chemical spray

The sprayer: Identification of hazards



Machinery Risk mitigation



Once hazards are listed, mitigation measures are detailed in the user manual and with pictograms



Machinery Risk mitigation

In Europe, it is regulated with the Machinery Directive & Amendment

- Risk assessment by the manufacturer
- Risk mitigation actions
 - By the design of the machine
 - By collective protection (shields, covers,...)
 - By personal protective equipments

L 157/24 EN Official Journal of the European Union 9.6.2006

DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 17 May 2006
on machinery, and amending Directive 95/16/EC (recast)
(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

- (4) In order to ensure legal certainty for users, the scope of this Directive and the concepts relating to its application should be defined as precisely as possible.

Having regard to the Treaty establishing the European Community, and in particular Article 95 thereof,

- (5) The Member States' mandatory provisions governing construction site hoists intended for lifting persons or persons and goods, which are often supplemented by de facto compulsory technical specifications and/or by voluntary standards, do not necessarily lead to different levels of health and safety but, because of their disparities, do nevertheless constitute barriers to trade within the Community. Moreover, the national systems for the conformity assessment and certification of these machines diverge considerably. It is therefore desirable not to exclude from the scope of this Directive construction site hoists intended for lifting persons or persons and goods.

Having regard to the proposal from the Commission ⁽¹⁾,

Having regard to the opinion of the European Economic and Social Committee ⁽²⁾,

Acting in accordance with the procedure laid down in Article 251 of the Treaty ⁽³⁾,

25.11.2009 EN Official Journal of the European Union L 310/29

DIRECTIVES

DIRECTIVE 2009/127/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 21 October 2009
amending Directive 2006/42/EC with regard to machinery for pesticide application
(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

application of pesticides that are plant protection products. However, since it is anticipated that the scope of the Framework Directive will be extended to cover biocidal products, the extension of the scope of the environmental protection requirements to machinery for the application of biocidal products should be examined by the Commission by 31 December 2012.

Having regard to the Treaty establishing the European Community, and in particular Article 95 thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and Social Committee ⁽¹⁾,

- (4) The requirements for the protection of the health and safety of persons and, where appropriate, domestic animals and property are already covered by Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery ⁽²⁾. It is therefore appropriate that essential environmental

Acting in accordance with the procedure laid down in Article 251 of the Treaty ⁽³⁾,

Risk assessment linked to the product

Combination of :

- Hazards linked to the chemical compounds (exposure scenarii)
 - To Human Health (operator/workers)
 - To environmental components : water courses/arthropods/sensitive crops/residents
- Hazards linked to the usage (application scenarii)
 - Filling phase
 - Spraying phase
 - Cleaning phase
- Requirements on chemical storage, empty container collection and specific filling/cleaning areas (waste management)



Risk assessment linked to the product

Example of a Chemical Label / Safety sheet



WARNING

Harmful if swallowed or if inhaled
Very toxic to aquatic life with long lasting effects.

Avoid breathing vapours/spray.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Avoid release to the environment.
Call a POISON CENTER/doctor if you feel unwell.
Collect spillage.
Dispose of contents / container in accordance with local / regional / national / international regulations.

To avoid risks to human health and the environment, comply with the instructions for use.

[catalogue/labels/label.pdf](#)
Alternatively, contact your supplier.



SAFETY PRECAUTIONS

a. Operator Protection

When using do not eat, drink or smoke.

Engineering control of operator exposure must be used where reasonably practicable in addition to the following personal protective equipment:

WEAR SUITABLE PROTECTIVE CLOTHING (COVERALLS) AND SUITABLE PROTECTIVE

GLOVES when handling the concentrate and when applying by hand-held equipment.

However, engineering controls may replace personal protective equipment if a COSHH assessment shows that they provide an equal or higher standard of protection.

WASH CONCENTRATE from skin or eyes immediately.

WASH HANDS AND EXPOSED SKIN before meals and after work.

WASH ALL PROTECTIVE CLOTHING thoroughly after use, especially the insides of gloves.

IF YOU FEEL UNWELL, seek medical advice (show the label where possible).

b. Environmental Protection

Do not contaminate water with the product or its container. Do not clean application equipment near surface water. Avoid contamination via drains from farmyards and roads.

To protect aquatic organisms, respect unsprayed buffer zone distance to surface water bodies in line with LERAP requirements. This product qualifies for inclusion within the Local Environment Risk Assessment for Pesticides (LERAP) scheme. Before each

spraying operation from a horizontal boom sprayer, either a LERAP must be carried out with the "Local Environment Risk Assessment for Pesticides Horizontal Boom Sprayers" booklet available from the HSE Chemical Regulation Directorate's website or the statutory buffer zone must be maintained. The result of the LERAP must be recorded and kept available for three years.

DO NOT ALLOW DIRECT SPRAY from horizontal boom sprayers to fall within 5m of the top of the bank of a static or flowing water body, unless a Local Environmental Risk Assessment for Pesticides (LERAP) permits a narrower buffer zone, or within 1m of the top of the bank which is dry at the time of application. **DO NOT ALLOW DIRECT SPRAY** from hand held sprayers to fall within 1m of the top of the bank of a static or flowing water body. Aim spray away from water.

TO PROTECT NON-TARGET ARTHROPODS respect an untreated buffer zone of 5m to noncrop land (see Directions for Use).

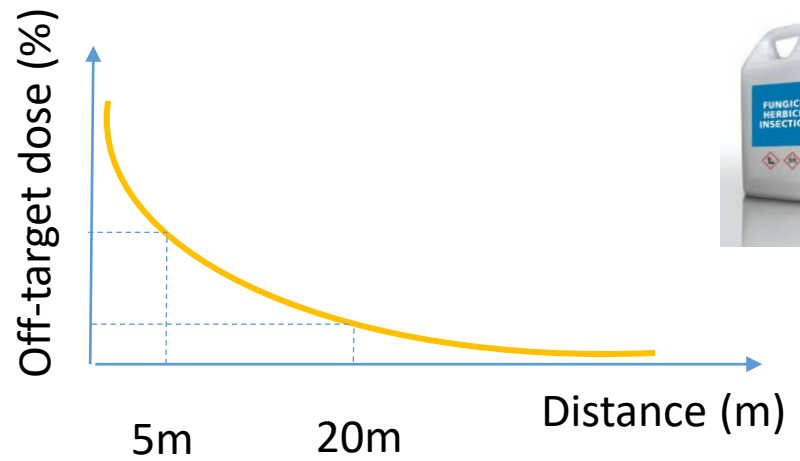
To reduce effects on non-target insects or other arthropods:

Use on cereals: **DO NOT SPRAY** within 5m of the field boundary.

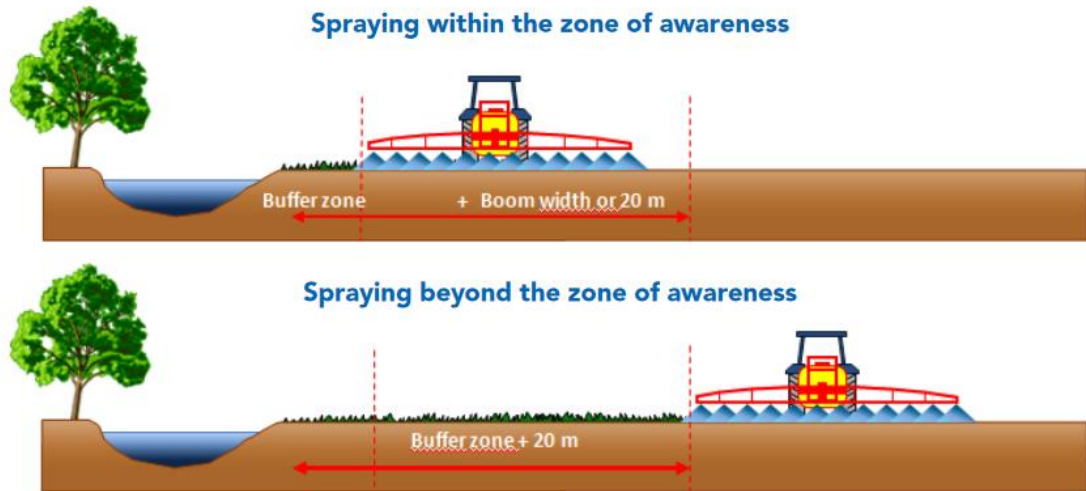
Use on other arable and vegetable crops through tractor-mounted boom sprayers: avoid spraying within 5m of the field boundary.

Risk assessment linked to the product and the impact of spray drift

Definition of risk mitigation measures



a



Protecting the Operator from chemical means the use of Personal Protective Equipements (PPE)

The dermal route is the main contamination with chemicals

- protect hands : gloves
- protect skin : coverall/mask
- Protect eyes : googles

Inhalation is the second main contamination

- mask (ex FFP2)



erhandl



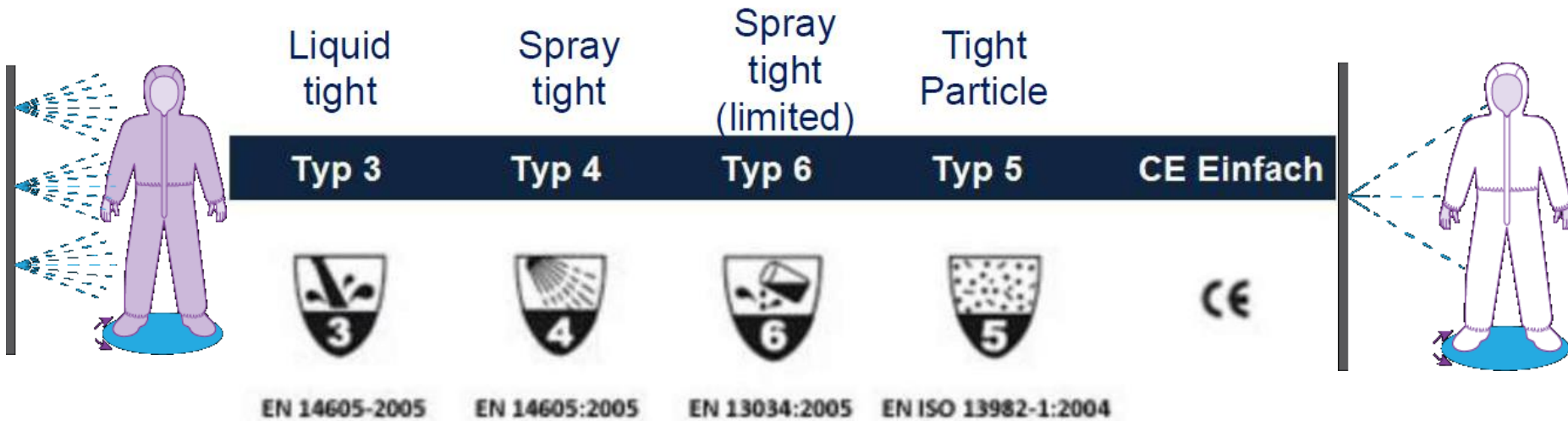


PPE (according to Directive 89/686/EEC)

Chemical protective clothing



PPE category III: to protect against risks which may seriously or irreversibly harm health



<http://www.efsa.europa.eu/en/141028a/docs/141028a-p06.pdf>

Efficacy of PPE against penetration



European Commission



Type	Cat III type 3	Cat III type 4	Gown / Apron Cat III type 3	Working overall	Work wear
Resistance to penetration	++++	+++	++++	++ (if water repelent)	+/-

Objective : less than 5% penetration



ISO 27065

P1



Closed transfer systems



Easy Flow®
(Agrotop/Bayer)



Ezy connect® BASF
Wisdom Systems



GoatThroat Pump



B Safe®
(Berthoud/Bayer)



Closed Jug System®
EPA DPR (1997)

What about the exposure when inspecting/testing sprayers in use ?



Contacts with the sprayer are mostly by hand

-> Clothes represent the first protection

Conclusion and Take Away Messages

A safe application of PPP involves the consideration of the different levels :

- The machine
- The product
- The context (wind)

Operator exposure can be mitigated

- Using clothes (hands are the contamination route)
- Using close transfer systems/filling place/container management
- Operating the application according to good agricultural practices
- A proper maintenance of the spraying equipment

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