Risk assessment for human health and the environment - - SPISE Working Group - Proposal -

Ganzelmeier, H.
Julius Kühn-Institut, Institut für Anwendungstechnik im Pflanzenschutz, Messeweg 11/12, 381104 Braunschweig, Germany
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Member States may apply different timetables and inspection intervals in exceptional cases following a risk assessment for human health and the environment including an assessment of the scale of the use of the Pesticide Application Equipment (PAE) (according Article 8 (3)).
The SPISE Working Group (SWG) proposed an assessment of the risk for human health and the environment, including an assessment of the scale of the use.
The aim of this initiative is to convince the Member States of a comparable risk assessment which is scientifically based, transparent and variable and complies with current scientific and technical knowledge. This principal approach has proved to be successful in many other areas technology and should therefore be able to be transferred to PAE.
This initiative by the SWG is welcomed by DG-Sanco and should definitely be developed further.
Risk evaluations are also carried out in many other technical areas. They are used as a basis for deriving and discussing a risk evaluation for PAE.
Risk assessment includes risk estimation and risk evaluation.
Risk estimation involves estimating the extent of the risk.
The risk resulting from a hazardous situation is defined by the extent to the damage and the probability of the damage occurring.
The extent of the damage can be estimated for the relevant PAE taking into consideration the relevant ISO/EN norm for inspections for this equipment. With the help of a points system which is based on the equipment components, the hazard potential can be calculated with regard to occupational safety and the environment. If this approach is transferred to the relevant types of PAE constructions, it will lead to a sequence of equipment with regard to the extent of damage they cause.
The probability of occurrence is influenced by several factors. If the probability of occurrence cannot be stated, the frequency of happenings can be used instead. It is proportional to the amount of equipment used in practice and varies between the types of construction and the Member States.
The risk assessment can determine which type of the relevant PAE has a low, a significant and a high risk with regard to occupational and environmental protection and allow to classify the necessity of an inspection as low, necessary or high.
To this end a risk matrix is compiled to carry out a risk which is verifiable and comprehensible according to Nohl. It combines the criterion of possible severe damage with the criterion of the probability of occurrence. The risk areas vary in appearance depending on the assessment criteria used, as shown in the power point presentation. These Fig.s/matrixes have to be discussed and modified, taking into consideration the situations in the Member States.

Wording of Framework Directive – Article 8 Inspection of equipment in use

§3(1) By way of derogation from paragraphs 1 and 2 and, following a risk assessment for human health and the environment including an assessment of the scale of the use of the equipment, Member States may:

Exemptions from inspection
Risk assessment

Risk assessment

Risk assessment includes **risk estimation** and **risk evaluation**

Risk estimation involves estimating the extent of the risk (acc. EN ISO 14121-1)

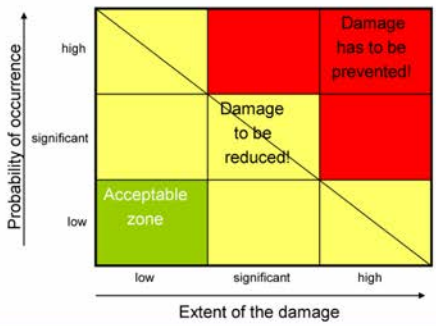
The risk resulting from a hazardous situation is defined by

- the extent of the damage and
- the probability of the damage occuring

RISK	=	Extent of the Damage	+	Probability of the Damage

Risk estimation

The **risk matrix** according to Nohl & Thiemecke [1] shows a verifiable and comprehensible way to combine the criterion of the possible extent of damage with the criterion of the probability of occurrence.



[1] Systematik zur Durchführung von Gefährdungsanalysen, Verlag für neue Wissenschaft 1988

Risk estimation

How to calculate the extent of damage?

The **extent of the damage** can be estimated for the relevant PAE (acc. classification scheme) taking into consideration the relevant ISO/EN Standards (acc. EN 13790) for inspection for this equipment.

1) Pesticide Appl. Equipment (PAE) used for spraying (incl. fogging)
2) hand-operated PAE
3) PAE not used for spraying
4) handheld PAE
5) knapsack sprayer
6) additional PAE
7) spray train
8) aircraft

Risk estimation

With the help of a **point system** which is based on the equipment components, the extent of the damage can be calculated with regard to the human health and the environment.
If this approach is transferred to the relevant types of PAE, it will lead to a sequence of equipment with regard to the extent of damage they cause. This fig shows an example of how this can be done.

Equipment components \ Pesticide Appl. Equipment (PAE)	spraying (incl. fogging)	hand-operated	not used for spraying
Power transmission parts	++	+	0
Pump	+	+	+
Agitation	+	+	0
Spray liquid tank	++	+	+
Pipes and hoses	+	++	++
Spray boom	+	0	0
Filter	0	0	0

Risk estimation – Calculation of extent of the damage

Equipment components \ Pesticide Appl. Equipment (PAE)	spraying (incl. fogging)	hand-operated	not used for spraying	handheld	knapsack sprayers	additional	additional/ train	additional/ aircraft
Power transmission parts	++	+	0	- -	- -	0	+	+
Pump	+	+	+	0	0	0	+	+
Agitation	+	+	0	- -	-	-	++	++
Spray liquid tank	++	+	+	- -	- -	+	++	++
Pipes and hoses	+	++	++	- -	- -	0	++	++
Spray boom	+	0	0	- -	- -	-	+	++
Filter	0	0	0	-	-	0	0	0
Nozzles	++	++	+	-	-	0	++	++
Controls	0	0	0	-	0	0	+	+
Regulation systems	+	0	0	-	-	+	++	++
Distribution / drift	+	0	0	-	0	0	++	++
Cleaning	++	0	0	-	-	0	++	++
Blowers	+	-	-	-	-	-	-	-
Point system:	195	160	147,5	57,5	70	140	197,5	200
	③	④	⑤	⑧	⑦	⑥	②	①
	205	165	150	45	60	125	215	230
	③	④	⑤	⑧	⑦	⑥	②	①

Point system:

very low	low	Ø	high	very high
- -	-	0	+	++
2,5	5	10	15	17,5

very low	low	Ø	high	very high
- -	-	0	+	++
0	5	10	15	20

Sequence according the extent of the damage

Risk estimation

How to calculate the probability of damage?

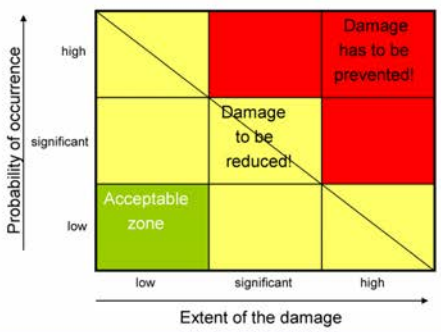
The **probability** of the damage (= probability of occurrence) is influenced by several factors.
If the probability of occurrence cannot be stated, the frequency of incidents can be used instead. It is proportional to the amount of equipment used in practice and varies between the types of equipment and the Member States.

Risk estimation involves estimating the probability of the damage

RISK	=	Extent of the Damage	+	**Probability of the Damage**

Risk estimation

The **risk matrix** according to Nohl & Thiemecke [1] shows a verifiable and comprehensible way to combine the criterion of the possible extent of damage with the criterion of the probability of occurrence.



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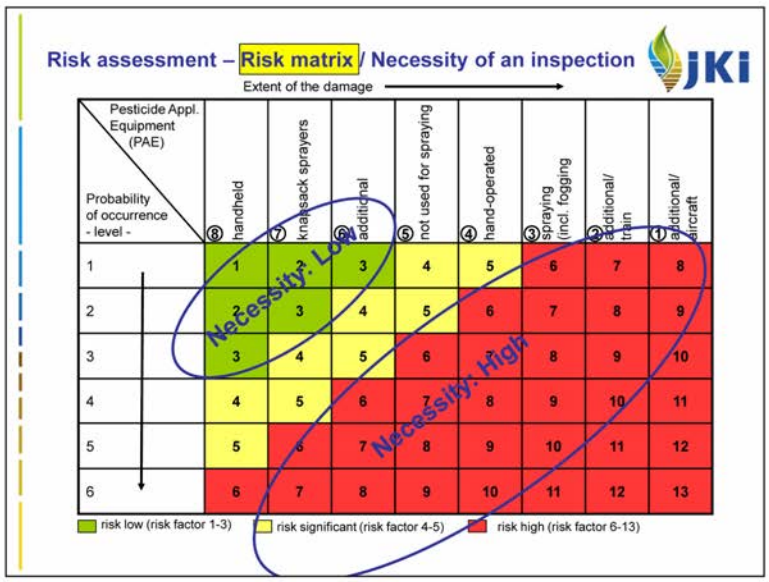

Risk assessment

The **risk assessment** can determine which type of the relevant pesticide application equipment has

- a low,
- a significant and
- a high risk

with regard to human health and environmental protection.
The **risk zones** vary depending on the assessment criteria used.

In a second step a classification regarding the necessity of an inspection as

- low,
- necessary or
- high

can be made.
These figures have to be discussed and modified, taking into consideration the situations in the Member States (e.g. amount of PAE)