

Risk-based Monitoring of Seveso sites in Finland

Inspection Rating System and Risk Factor

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Finnish Safety and Chemical Agency (Tukes)



Industrial Department

Industrial Processes -team

- Competent Authority for SEVESO III
- Team of 15 inspectors
- 326 Seveso establishments
- 345 Permit establishments
- 420 Explosives storages

Risk-based decision making in use since 2005.

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Inspection Plan

Upper tier establishments are inspected once a year, lower tier every three years.

SEVESO III allows us to use flexible inspection schedule (Art. 20). The benefit of this is that resources can be allocated where they are needed most.

Establishments inspection frequency can be changed if the following factors suggest it:

- 1) Inspection results (rating)
- 2) Risk factor
- 3) Incident history

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Inspection Agenda

1. Compliance (regulations, standards, permit conditions)
2. Management and Personnel Commitment (depicts safety culture)
3. Risk Assessments
4. Management of Change
5. Monitoring of Implementation (technical requirements, maintenance)
6. Operating instructions, competence and training
7. Emergency planning
8. Site tour



Evaluation

Each headline is evaluated on a scale of 0 to 5:

5 = Proactive developer

4 = Good Practices

3 = Compliance with regulations

2 = Need for development

1 = Significant deficiencies

0 = Serious deficiencies

The evaluation is done by comparing the establishments present state to internal guidance. The inspectorates management supervise that the ratings correlate with the written inspection reports.



Risk Factor

Inspection schedule can't be decided solely on inspection results. Several factors that are not part of SMS needs to be also taken into account. For example:

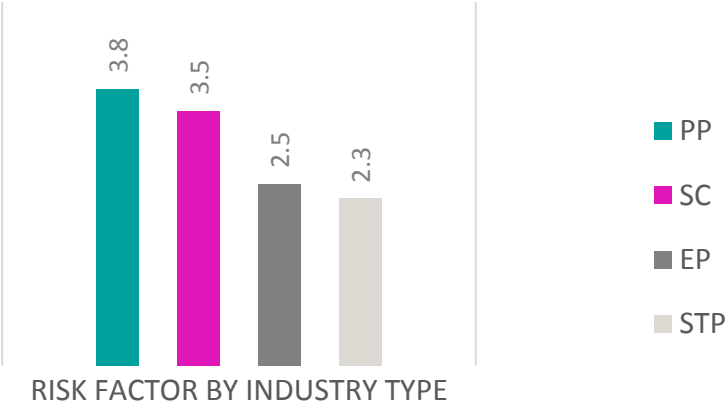
- Possible accidents and consequences
- Complexity of processes
- Reactivity of chemicals
- Ownership and financial situation
- Location and neighbors

In 2015 another numeric tool was created - *risk factor*.

- Not disclosed to establishments in writing (security)
- Change in the inspection frequency is possible if *inspection rating system* and *risk factor* do not contradict

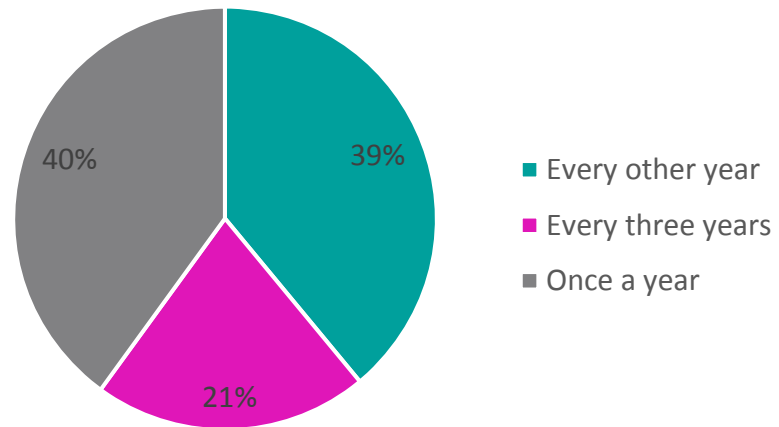
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Risk Factor



Frequency of Inspections

Upper tier establishments



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Case example

Upper tier establishment, contract manufacturing of specialty chemicals. The frequency of inspections was changed from once a year to every second year in 2005.

Results from Inspection Rating System (0-5)	2009	2011	2013	2015	2017
Compliance	3	3	-	3,5	3,5
Management and Personnel Commitment	3	3,5	4	4	4
Risk Assessment	3	3	3,5	3,5	-
Management of Change (in use from 2013 ->)	-	-	-	4	4
Monitoring of Implementation	3,5	3,5	3,5	3,5	4
Operating instructions, competence and training	3,5	-	3,5	3,5	3,5
Emergency planning	3,5	3	3	3,5	3,5

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Case example

In 2017 the analysis for risk factor produced a value of 4,1 (1-5 scale). The frequency of inspections had to be returned to once a year. Reason for high risk factor value in this case was because of:

- Reactive chemicals
- Complex processes
- Pipelines
- Accident consequences
- Spreading of contaminated fire water
- Domino effects

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Arguments for and against

Pros:

- Easy to get a general idea of establishments safety situation
- Decisions are backed up by data
- Statistics for reporting

Cons:

- Validity – are we measuring the right things?
- Variance and subjectivity – How the results differ from one inspector to another?
- Overlapping

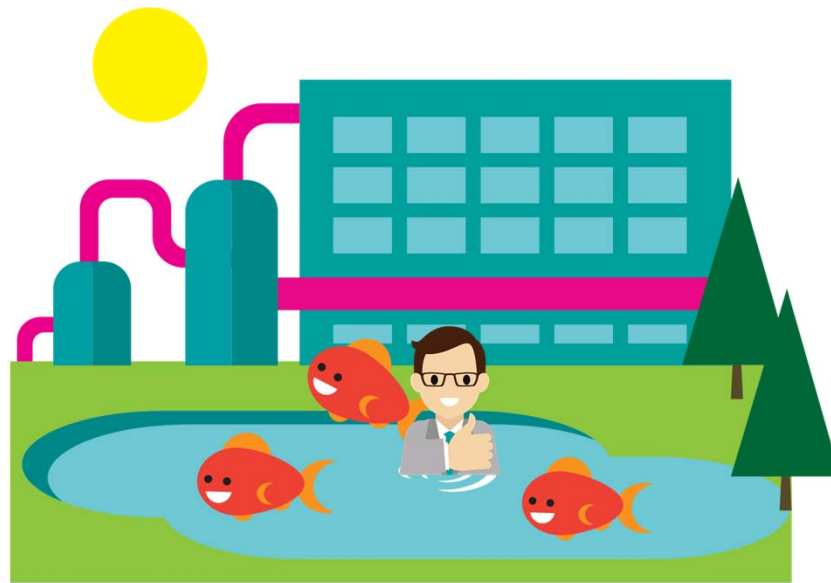
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Further reading

Doctoral Thesis: *Assessment of Process Safety Performance in Seveso Establishments* (Kaisa Kotisalo, 2016)

https://www.doria.fi/bitstream/handle/10024/129881/Kaisa%20Kotisalo_A4.pdf





MJV Austria, Hernstein 4/2018
matti.peippo@tukes.fi

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