

# Supporting **IRAM** Implementation



## Risk assessment methods used in Europe



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23 – 24 March 2016 / Sarajevo, Bosnia and Herzegovina

## Objectives of easyTools Project

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- Evaluation of existing inspection tools and risk criteria
- Development of a risk assessment tool for environmental inspections that could easily be used by every IMPEL member
- Integration into inspection cycle from Step by step guidance book (DTRT)
- Availability from the IMPEL website as an advanced IT tool
- Linking to the requirements of the EU environmental law and RMCEI



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# The questionnaire

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- Definitions used:
  - **Risk** is defined in a broad way. It includes any factor an authority wants to take into account when assessing priorities
  - **Risk Assessment**: process of quantifying the risk by measuring the (potential) effect and the probability of the occurrence
- The aim of the questionnaire was to get an evaluation of risk assessment tools and risk criteria currently used in IMPEL member countries



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# The questionnaire

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- The questionnaire consists in several questions regarding:
  - using of risk assessment (RA) in inspections planning
  - for which inspection tasks the RA is used
  - risk criteria (RC), scoring system, weighting factors, mathematical algorithm
  - software tool used for performing the RA
  - evaluation of RA methodology
  - ways for updating the RA
  - what kind of software should be used by the project
- The questionnaire has been sent out to the National Coordinators of IMPEL



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## The results of questionnaire

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- There were received 25 answers from: Italy (Lombardi), Ireland, Germany (Munster, Hessen, Hamburg, Detmold, Schleswig-Holstein, Cologne, Bremen, Rheinland-Pfalz), Spain (Extremadura, Basque Country, Madrid), Poland, Portugal, Macedonia, Romania, Latvia, Turkey, France, Slovakia, Denmark, Slovenia, Finland and Greece
- Since DTRT the number of environmental authorities that use a risk base approach for environmental inspections planning has increased
- A risk based approach is used for a variety of tasks, most common are IPPC (IED) and Seveso inspections
- Risk assessment tools, risk criteria and scoring systems vary from country to country
- Mathematical algorithms are different
- IMPEL member countries use in the most cases MS-Excel sheets or databases as IT tools for RA



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## RA tools identified

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- Three general types of methods for RA were identified:
  - **Linear Mean Value:** mean values or sums of all (weighted) criteria scores are assigned to risk categories and inspection frequencies (Spain, Cologne-DE)
  - **Mean Value of Risk:** mean values of impact criteria multiplied by probability criteria are assigned to risk categories (OPRA – EN, NL, PO, PT)
  - **Maximum Value:** inspection task with highest frequency determine inspection frequency (France)



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# Linear Mean Value

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- Definition of risk is:  

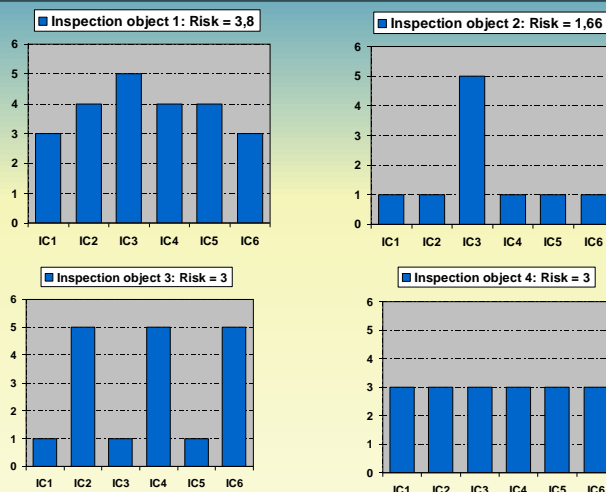
$$\text{Risk} = (\text{IC1} + \text{IC2} + \dots + \text{ICn})/n$$
- All impact criteria (IC) scores are added and the mean (or average) score is determined
- Advantages:
  - simple to use
- Disadvantages:
  - high risks are levelled out by low risks
  - the more criteria, the smaller the spread ("range")
  - the limits of risk categories are not transparent
  - not a real risk assessment because no probability factor is taken in the calculation



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## Linear Mean Values - examples

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## Mean Value of Risk

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- Definition of risk is:  
$$\text{Risk} = (\text{IC1} + \text{IC2} + \dots + \text{ICn}) / n \times \text{Probability}$$
- Basically the same, but Probability is taken in account
- Advantages:
  - good cumulative effects
  - clear use of weighting factors
- The same disadvantages except 'Probability'
- One other disadvantage: the result depends to a great extent on the probability factor



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## Maximum value

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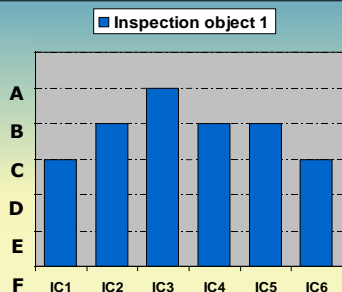
- Every inspection task has a fixed frequency:
    - Seveso establishment: once a year
    - IPPC installation: every three years
    - Facility under COV Directive: every seven years
    - and so on
- Inspection frequency =
- $$\text{Max}(\text{inspection task 1, inspection task 2, ..., inspection task n})$$
- The highest frequency counts



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## Maximum Value - examples

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- A = inspection once a year
- B = inspection once every 2 years
- C = inspection once every 3 years
- D = inspection once every 4 years
- E = inspection once every 5 years
- F = no inspections



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## Maximum Value – advantages & disadvantages

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- Advantages:
  - it is quite simple
  - most important effects don't get levelled out in the calculation
- Disadvantages:
  - No risk assessment within the inspection task
  - Not a real risk assessment because no probability factor is taken in the calculation
  - The outcome shows a relative higher number of high risk facilities than other methods
  - No steering mechanism
  - The inspection frequencies of less important inspection tasks do not influence the result. This information about inspection object is not used



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## Result of the questionnaire

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- Based on the results presented above within easyTools project was developed “Integrated Risk Assessment Method” = IRAM, by
  - combining the advantages of the three methods, while
  - limiting the disadvantages



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## Thank you for your attention

Thank you for your attention



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