

easyTools



IMPEL Project

**Risk Assessment in
Inspection Planning**

A European Perspective



European Union Network for
the Implementation and Enforcement
of Environmental Law

**Report on the
Results of the questionnaire**

**Draft report
June 2010**

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1. Introduction

This is the first report of the IMPEL project “Development of an easy and flexible risk assessment tool as a part of the planning of environmental inspections linked to European environmental law and the RMCEI“. For ease, this project is referred to as the **easyTools** project!

The aim of the easyTools project is to develop a flexible and user friendly programme for risk assessment. This assessment is for use within the planning of environmental inspections. The product will be an application that can be accessed through the internet.

The risk assessment tool will be part of the “planning cycle” described in the “Step by step guidance book for planning of environmental inspection” developed by the “Doing The Right Things” project (DTRT). It will take into account the needs of the IMPEL member countries as well as the requirements of European environmental law such as the forthcoming Industrial Emissions Directive (IED) and it will be linked to the Recommendation on Minimum Criteria for Environmental Inspections (RMCEI). It will be based on results of an evaluation of risk assessment tools and risk criteria currently used in IMPEL member countries.

A questionnaire was developed for the evaluation (see section 2). This was sent out to the National Coordinators of IMPEL on 21 March 2010. to be filled in and returned before 23 April 2010.

This report contains the results and conclusions drawn from the returned questionnaires. In section 3 a summary of the results can be found. Section 4 gives the conclusions of the evaluation of the questionnaires. In section 5 and 6 the feedback to the questionnaire from the different IMPEL Member countries is given.

2. The questionnaire

Definitions of terms used in the questionnaire

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

Question 1

Do you use a risk assessment approach when planning inspections?
 If yes continue with question 2, if no continue with question 9.

Question 2

For which statutory tasks of your organisation do you use the risk assessment approach?

Question 3

Specify the methodology of your risk assessment(s) by answering the following questions:

- What risk criteria do you use?
- What scoring systems do you use?
- Do you use weighting factors and how are they determined?
- How does your mathematical algorithm (the way your system calculates) work?
- How do you use the output of your risk assessment in terms of ranking and classification?

Question 4

Do you use a software tool for performing the risk assessment?
 If yes, is this tool accessible by internet? Is it possible to receive a copy?

Question 5

Have you already evaluated the risk assessment methodology in practice?
 If yes, what was the outcome?

Question 6

How is the risk assessment updated?

Question 7

Is the risk assessment methodology set by law?

Question 8

When you assess risk, what form do input and output data have? (Database, 1 big excel sheet, 1 excel sheet for each facility...)

Question 9

Do you prefer a tool developed on the basis of general software (e.g. MS Office, MS Excel) or a tool developed on the basis of more specialized software (e.g. Visual C++ or other programming software)? If you prefer a tool developed on the basis of more specialized software, what architecture of the tool would suit you better (for your IT needs)?

Question 10

Do you have any issues, concerning risk assessment that you would like to share with us that could be interesting for this project?

3. Summary of the results

We have 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.

Question No 1: Do you use a risk assessment approach when planning inspections?

- 19 respondents answered YES: *Ireland, Germany (Munster, Hessen, Detmold, Schleswig-Holstein, Cologne, Bremen, Rheinland-Pfalz), Spain (Extremadura, Basque Country, Madrid), Poland, Portugal, Romania, France, Denmark, Slovenia, Finland and Greece*
- 6 respondents answered NO: *Italy (Lombardi), Germany (Hamburg), Macedonia, Latvia, Turkey, Slovakia*

Question No 2: For which statutory tasks of your organisation do you use the risk assessment approach?

There is a wide range of statutory tasks for which a risk assessment approach is used across the IMPEL Member countries. The most common tasks are:

- Inspection of IPPC installations and
- Inspection of SEVESO establishments

Other tasks that are mentioned are:

- Enforcement of waste water treatment plants
- Enforcement of waste management
- Enforcement of air pollution
- For setting self monitoring and reporting conditions for operators
- Inspection of small and medium size enterprises
- Enforcement of EIA
- Enforcement of Biodiversity and Natura 2000
- Enforcement of LCP
- Enforcement of VOC
- Enforcement of Emission Trading Scheme

Question No 3: Specify the methodology of your risk assessment(s) by answering the following questions:

What risk criteria do you use?

The responses show that there are many risk criteria in use.

The most common used criteria are:

- *IPPC Installations and other industrial installations*
 - Category / does the facility fall under the scope of the IPPC directive
 - Production capacity of the installation
 - Location (including: distance to sensitive areas/objects, state of the environment)
 - Complexity (including: type of installation, size)
 - Emissions to air (the amount or load, the number and type of substances, level of monitoring)
 - Emissions to water
 - Emission of noise
 - Environmental management
 - Attitude of operator
 - Compliance behaviour (non-compliances, fines etc)
 - Number of complaints
 - Amount of hazardous / non-hazardous waste (waste management)

- *Seveso establishments*
 - Dangerous substances (number and amount)
 - Neighbourhood
 - Safety measures of the establishment

Other criteria that are in use:

- *IPPC Installations and other industrial installations*
 - National priorities
 - Soil pollution
 - Potential threat to human health or damage to nature
 - Raw material and energy / fuel types that are used
 - Pollution abatement technique
 - Impact of emission / effects to local and regional public health
 - Subjective evaluation of inspector
 - Number and type of regulation applicable for installation
 - Number of employees
 - Number of installations of the same sector within the region
- *Seveso establishments*
 - Number of plants in an industrial area
 - Physical state and toxicity of the substance
 - Operating type
 - Results of the last inspection
 - Number of accidents
 - Results from inspection of safety reports
 - Results from inspections of independent authorised experts or of the operators

What scoring systems do you use?

Respondents have provided insufficient information on their scoring system. Almost all scoring systems in use assign points from 1 to 5 (or to 10) for each criterion by comparison with pre-established thresholds.

There are scoring systems that use a matrix method (dimension and impact) to assign the score for each criteria (Portugal) or that assign points by comparison with similar activities (Greece).

Do you use weighting factors and how are they determined?

Five respondents answered that their risk assessment tools use weighting factors but how they are determined is unclear. Some examples:

- The weighting factor depends on the experience of the inspector
- The weighting factors are determined according to the importance of the criteria
- The weighting factors were established based on experience from previous inspections
- The weighting factors are established by national priorities

How does your mathematical algorithm (the way your system calculates) work?

There are a lot of different approaches on how the system in use for risk assessment calculates the final score. Some of the systems use the function "IF" (from comparison). Other systems use summation and average values and multiplying with weighting factors where is applicable. Finally the risk value is compared with threshold values for categorising in risk categories (e.g. high risk, medium risk, low risk or others).

How do you use the output of your risk assessment in terms of ranking and classification?

The output of risk assessment tools are used mainly to prioritise the (IPPC or SEVESO) installations/establishments. This prioritisation determines the number and type of inspections to be carried out within a certain time period (one year).

In some cases the output is used to determine the resources that are needed.

Question 4: Do you use a software tool for performing the risk assessment?

- 13 respondents answered YES: *Ireland, Germany (Cologne, Detmold, Muenster, Rheinland-Pfalz), Spain (Basque Country, Madrid), Poland, Portugal, Romania, France, Denmark, Slovenia*
- 4 respondents answered NO: *Germany (Bremen), Spain (Extremadura), Greece, Finland*
- 2 respondents answered: NOT NECESSARY: *Germany (Schleswig-Holstein, Hessen).*

Question 5: Have you already evaluated the risk assessment methodology in practice? If yes, what was the outcome?

Most of the respondents answered that they have only recently started using a risk assessment approach for planning of environmental inspection. Evaluation of the methodologies is planned for the near future.

In Ireland, Spain (Basque) and France an evaluation has already been carried out.

Ireland: "The development of the methodology commenced in 2005 and it has undergone a number of testing regimes and revisions since its inception. The concept of assigning enforcement categories to licensed facilities was the subject of a joint EPA/IBEC organised conference which was held in May 2006. The OEE took account of a number of valuable comments received both at and following this conference and in September 2006 undertook a pilot phase testing of the methodology with a number of IBEC nominated licensees. The methodology was further revised following the pilot phase testing".

Spain: "It is useful to plan sector inspections. One of the main issues with the tool is that even the time needed to collect the data to keep the database update is not high. It is an extra to the rest of the work of the visit that is normally done at the end without the same care that the inspection itself".

France: Their inspections process (which includes the risk assessment tool) has been evaluated by the industry's representatives a few years ago and reports show they seem to be happy with the process.

Question 6: How is the risk assessment updated?

In most cases the risk assessment is updated after each inspection is carried out (Germany – Cologne, Detmold, Muenster, Spain – Basque Country, Poland, Denmark and Slovenia). There are some cases in which updating is carried out annually (Ireland, Romania, France) or if there are new installations to inspect (Germany – Bremen). In some cases updating has, to date, never been done (Spain – Basque Country, Finland, Germany - Hessen).

Question 7: Is the risk assessment methodology set by law?

- 13 respondents answered NO: *Ireland, Germany (Cologne, Detmold, Muenster, Schleswig-Holstein and Bremen), Spain (Basque Country and Madrid), Poland, France (ministerial directives), Denmark, Finland and Greece.*
- 3 respondents answered YES: *Romania (by Order of Environmental Ministry), Germany, Rheinland-Pfalz (demanded by Article 18 of the Seveso-II-Directive) and Slovenia (in general but not the methodology itself)*
- 1 respondent answered: NOT YET: *Spain (Extremadura).*

Question 8: When you assess risk, what form do input and output data have? (Database, 1 big excel sheet, 1 excel sheet for each facility...)

There are many forms in use for input and output data. Some examples are:

- 1 Excel sheet for each facility: *Ireland, Germany (Schleswig-Holstein, Cologne, Detmold, Muenster)*
- 1 big table: *Germany (Bremen)*
- A database: *Spain (Extremadura), Slovenia, Portugal and Poland*
- An access database: *Spain (Basque Country, Madrid)*
- 4 big excel sheets: 3 excel sheets for input data and 1 excel sheet for output data: *Romania*
- A huge SQL database: *France*
- Special software (Denmark)

- Special software and Excel sheets: Germany, Rheinland-Pfalz

Question 9: Do you prefer a tool developed on the basis of general software (e.g. MS Office, MS Excel) or a tool developed on the basis of more specialized software (e.g. Visual C++ or other programming software)? If you prefer a tool developed on the basis of more specialized software, what architecture of the tool would suit you better (for your IT needs)?

Most respondents answered that they prefer general software (like MS Excel or MS Access) to the more specialised software.

There were some proposals for specialised software developed on SQL platform (Germany – Cologne, Romania, Spain – Basque Country).

The respondents outlined that the software that will be developed under our project has to allow import or export data from existing databases.

One of the respondents expects that the Commission will set some rules and guidelines with the coming IED .

Question 10: Do you have any issues, concerning risk assessment that you would like to share with us that could be interesting for this project?

The following issues are relevant for the development of a risk assessment tool:

- The tool should be easy to use and flexible
- The tool should produce a schedule with the inspections and the inspectors, taking into account non routine inspections
- The risk approach should be linked to the objectives to get a complete approach for an efficient and effective inspection.
- It should be possible to update the tool in an easy way
- The link to systems that are already in use
- There can be a conflict between outcome of a risk assessment and the national legal requirements on inspection frequencies.
- The risk criteria should be made as simple and effective as possible
- The output of the IT Tool developed under easyTools Project should be a list of controlled installation and activities ranked on the basis of their risk score.
- Gathering the information for risk assessment should be easily achieved.
- More information about IT Tool developed under easyTools Project and training opportunities on using the tool should be available in future.
- Weighting indicators is a subject which needs to be reviewed regularly according to the general/specific objectives of the organisation.
- It should be possible to execute a risk assessment on different levels of planning within an organisation
- The project should deliver an overview of criteria and calculation methods in the different IMPEL member countries
- A risk assessment approach has to be straightforward and quick to operate. An assessment requiring too much detail leads to low acceptance by the inspector and to low quality data input to finish the assessment.

4. Conclusions

Since the DTRT Project, the number of environmental authorities that now use a risk based approach for planning inspections has increased exponentially.

A risk based approach is used for planning inspections for a variety of statutory tasks, the most common being IPPC and SEVESO.

The risk assessment tools used, vary from country to country. Even when there are common criteria in use, these criteria are being used in a different way.

For a conclusion on the scoring systems that are being used more detailed research would be needed.

The mathematical algorithms of the various systems are different.

Weighting factors are hardly used, but when used they also vary.

Most IMPEL member countries use IT tools for their risk assessment. The IT tools that are used are in most cases Excel sheets or databases. There is a preference to use general software like MS-Excel or MS-access.

There is little experience of the evaluation of risk assessment tools.

In most cases risk assessments are updated after every inspection.

In only 3 IMPEL Member countries is risk assessment for IPPC inspections required by national legislation.

Recommendation:

To select a few risk assessment tools (based on the feedback of this questionnaire) and ask for more detailed information for further research.

5. Respondents with a Risk Assessment approach

*In the feedback of the different IMPEL member countries only the answers are taken in.
Go to section 2 to see the questions.*

5.1 DENMARK

1: Yes, Each officer makes an assessment but without any common methodology or check-list. We inspect all facilities once every 3 year. It is a political decision.

2:

- a) Planning of all industry inspections
- b) For inspecting IPPC installations and for setting self-monitoring and reporting conditions in permits

3: Criteria: Individual caseworker assessment of the risk posed. All aspects are relevant in this assessment – soil/groundwater, noise, wastewater, risk of accidents, etc.

What scoring systems do you use? Today we use categorizing instruments as described in the national guideline concerning differentiated inspection practices.

Do you use weighting factors and how are they determined? No. The former regional authority did use such methods, based on authority strategy and goals and level of environmental loading/negative effects – but not in the municipal authority where I am employed today. See answer 8.

How does your mathematical algorithm (the way your system calculates) work: Not relevant. Subjective assessment of criteria. The subjective assessment does lead to a score of high, middle or low for environmental information and environmental management, and a score of high, middle or low for environmental compliance. Together these two scores give a score of category 1, 2 or 3, category 1 industries being the best at compliance and management and thus needing less inspection. Categorizing does though not in all cases lead to less inspection. The complexity and dynamics of the company leads to a subjective assessment of the need for regular contact. But contact can be more in the form of telephone, e-mail and meetings and less in the form of physical inspections, if it is a company that often is rated as category 1.

How do you use the output of your risk assessment in terms of ranking and classification? See answer above.

Each officer should consider:

Inspection reports from the last 3 years. The performance of the operator: concerning legal performance (compliance with limit values etc.), performance of systematic work with environmental aspects. The potential environmental influence of the installation (e.g. air pollution, noise, wastewater, risk of soil pollution, ground water protection etc.).

Scoring matrix: (As used in the Danish EPA guidance no 6/2004)

Systematik og information	Høj	3	1	1
	Middel	3	2	1
	Lav	3	2	2
		Lav	Middel	Høj
		<i>Lovlydighed</i>		

(‘Lovlydighed’ = compliance with regulations, ‘Systematic og information’ = systematic work and information to public, ‘Lav Middel Høj’ = low middle high)

Level 1: installations with high legal performance and a high systematic work within environmental issues.

The scoring matrix – together with other factors such as potential environmental impact – is used for planning and setting priorities for the use of resources. For many IPPC-installations will the inspecting officer's evaluation of the potential environmental impact be a more important factor than the scoring.

Weighing factors are in a simple but not determined way included in the scoring matrix above.

We do not use a mathematical ranking system. Each installation should be "total inspected" at least each 3 year. In general each installation will be inspected at least once a year.

4: Yes. Categorizing is integrated in the Geoenvirom tool. See this website:

English: <http://www.geoenvirom.eu/> <http://www.geoenvirom.eu/Industry-PPC.htm>

Danish: <http://www.geokon.dk/>

5. No / Not recently

6: a) After every complete, regular inspection (which can be a collection of inspections which together cover the whole establishment) we undertake categorizing of the company and planning of the next inspection.

b) No current updating considered.

7:

a) No. There are agreements with the state level concerning minimum frequency of inspections. And minimum inspection frequency at Seveso sites is determined by Seveso legislation. But categorizing is based on a national environmental guideline.

b) Please read answer 3. There is no risk assessment methodology set by law. The EPA guidance is used for inspection planning.

8:

c) In the municipal authority where I work we have only the individual categorizing information within the Geoenvirom product. So this is only a small amount of information with our subjective assessment of management/information and compliance level.

In the regional authority (Vejle Amt), which was shut down after the structural reform 1.1.2007, we had a more detailed sheet for each industry, with an assessment of several industrial environment parameters/goals. This was used to determine inspection frequency and focus for the next inspection as well as assess which goals we had in relation to selected industries.

If for example the authority's goals for the whole industry sector were 1)more systematic environmental management and 2)better groundwater protection we would assess selected industries in relation to these goals. This could lead to more intensive inspections and targeted inspections. As well as to intensified dialogue concerning voluntary environmental management. This way of prioritizing relates to the networking with industry this region of Denmark has been engaged in since 1995. See our Green Network with industry at <http://www.greennetwork.dk/>

Assessment of environmental potential with following subject areas on the basis of the level of environmental loading/negative effect and on the basis of environmental management level:

- Raw materials/Products
- Wastewater
- Energy
- Transport
- Air
- Nuisances
- Accident risk
- Soil and groundwater
- Waste

Goals from a selection of the following subject areas were developed for those companies that were prioritized on basis of an assessment of the above mentioned environmental potential. The goals were created partly to meet selected local, regional, national and EU goals, strategic and otherwise.

- Product orientated/LCA
- Wastewater
- Energy
- Transport
- Air emissions
- Nuisances
- Accident risk
- Soil and groundwater pollution
- Environmental management

Example: assessment of authority goals for a waste incinerator plant:

- Parameter / Goal (numbered) / Result
- Raw materials /
 - avoid unintentional emissions / Receiving system developed and positive list complied with in 2004.
 - avoid unnecessary use of authority's time and resources / Company develops a system so the suitability for incineration of a waste material is evaluated extensively before an application is sent to the authority (2004)

b) A database is used for input to scheduled inspections and for the outcome eg. enforcements, police notices, etc. The database also includes permits, installation data, operator data etc. but no risk output data as such

9:

a) General software. Make it simple. Inspector's lives today are already very complicated. We have enough IT systems already. The more simple and easy to use the product is the better. As well we have to think of IT license costs. Most municipalities in Denmark are cutting costs drastically right now, with no end in sight. So the economic factor for new tools is an important one. In Denmark most authorities use Geoenviron or Struktura. So any new model for inspection prioritizing would be something that can be integrated in existing register systems. For example a model could be integrated in Geoenviron and reports could be made from Geoenviron to Excel or other general software.

b) No preferences. We are using specialized software right now

c) We prefer a tool developed on the basis of general software.

d) We prefer a tool developed on the basis of general software

10: We do have a geographically based determinant for inspection frequency in one particular groundwater protection area (which quite possibly will be expanded to cover all important groundwater protection areas in the new, larger municipality). This is in our Lysholt groundwater area that supplies a large part of the city of Vejle with drinking water. In the groundwater recharge area for these wells there is a minimum inspection frequency of once a year for all industry, large and small. As well, there are strict rules for types of industry and demands towards these industries based on groundwater protection. This is covered in the Lysholt Agreement, which is a local groundwater protection agreement made by the former regional authority and the municipality of Vejle.

5.2 FINLAND

1: Yes

2. Inspection units (15 in Finland) use risk assessment approach to build up an inspection plan, which is publicly available in the internet and to build up (inspector by inspector) an inspection programme which consists of individual inspectors' plans. Inspection units are quite independent in their work. The ministry of the environments sets general objectives for the compliance monitoring, but due to underdeveloped outcome indicators the risk assessment approach plays there a minor role. Inspection frequency is determined risk assessment and in Internet the inspection class each facility is displayed.

3: Criteria can be divided in four categories:

- the potential of the facility to pose a threat to human health or damage to nature; what kind of emissions the facility has and how big emissions are
- does the facility belong to the scope of the IPPC directive
- compliance behaviour: how often the facility has exceeded the limit values, how quickly it has been able to restore to the legal status and how much the facility has "generated" complains made by the public.
- in Finland the facility can request inspection

Up to this year inspectors have been able to make almost all needed inspections only the inspections requested by the operator had been controlled.

4. No. There is plan to produce one during this year, but it will be integrated to electronic compliance monitoring system (= VAHTI).

5. All inspections are based on risk assessment. Criteria for inspection are in inspection guide which was published in 2005 (only Finnish and Swedish) which is available in the Internet.

6: We have general guidelines. We have not updated the guidelines, but inspection units have fine turned these to better fill to their circumstances.

7: No, the limited personal power requires risk based approach more and more in the future.

8: No form, it is up to an inspector to do the choice and if necessary justify choses to the director who is responsible the compliance monitoring of the facilities in their yearly business negotiations.

9: We shall produce our own which will be integrated to our IT-system. More important is that main principles are clearly defined and available to all. The coming IE directive includes some rules and it is expected that the Commission will give further guidelines based on the directive.

5.3 FRANCE

1: Yes

2: Instruction of authorization process, and inspections.

3: Scoring system :

Three facilities' categories are defined : Declared, Registered and Authorised. The first ones can start their activities as soon as they have declared they will. The Registered (This is a brand new category that was enforced by law a few weeks ago) have a simple procedure to fulfil before they can. The authorised need to get a proper authorisation (which usually takes approx. 1 year). The "declared" rarely get inspected (mainly upon complaint, or when a national order is given to check in every region a certain number of {dry cleaners / printers /...}).

Among the "authorised" category, three subcategories of facilities are defined : "national priorities", "high stake", "other". The "national priorities" get inspected every year. The "high stake" get inspected every 3 years. The "others" get inspected every 10 years (about to shrink down to 7 years for the latters).

This classification as "national priorities/high stake/other" is a risk assessment tool, since it is based upon national criteria for evaluating risks generated by the facility, as shown below.

Criteria are :

- National priorities
 - Waste facilities (with certain threshold for each type : dangerous waste facilities, non dangerous waste stockings, non dangerous waste incineration)
 - Measured Air emissions (SOx, NOx, dust, Cl, Cd+Hg, ...)
 - Measured Water emissions (COD, hydrocarbs, As+Cr+Cu+Sn+Mn+Ti+Zn, Cd+Hg+Ni+Pb) with different threshold depending on where they reject (wastewater treatment plant, river, lake)
 - Manure spreading (with tonnage threshold)
 - Porks and poultry Farming (with tonnage of Nitrogen threshold)
 - Polluted sites that have specific problems.
- High stakes (among those who are not already above, following ones are High stakes)
 - IPPC
 - CO2 quotas
 - Large Combustion Plants
 - Incinerators
 - COV emitting plants (threshold on tonnage)
 - Wastewater treatment plant treating industrial wastewater

Weighting factors, mathematical calculation

We don't really have weighting factors (although inspectors naturally know what is important and what is not, and tend to go more often in places they know they have more things to see / to do). The mathematical calculation is a "max" and not a sum.

Output

We have an integrated database that is linked with a software (GIDIC) used by all inspectors in France to put in data. This software can be manually updated as regards to the "subcategory" the facility falls in (although it would probably be preferable to get this task done automatically, and update manually the happy few that can't be done automatically)

4: GIDIC is the software we use to organize the inspection's work. It will soon be replaced by its successor : SIIC. It contains (or should contain) everything we know about a facility. It is not possible to get a copy for other member states at this point.

5: The risk assessment methodology has not been evaluated. The "inspection" process has been evaluated by the industry's representatives a few years ago (5 ?). Reports show they seem to be happy with the process.

6: List of criteria (shown in question 3) may be updated up to once a year. For instance, it includes new factors about “being IPPC or not”, that didn’t exist four years ago.

7: No. These are ministerial directives (ie not legally applicable, but hierarchical orders)

8: We have a huge database (SQL type), linked to a software that is fully available to all inspectors, and part of the data is made accessible to the public on an open website (<http://installationsclassees.ecologie.gouv.fr/rechercheICForm.php>)

9: The tool will or would have to be integrated into the core of our software. We won’t ask for that from IMPEL, and so, the best thing we can hope is the implementation (if any at all) of the calculation on a simple Excel Sheet. A simple “formula” would even be enough, if it proves to be implementable.

10: We are more interested in other countries’ criteria and calculation methods than the actual informatical implementation.

5.4 GERMANY - Detmold

1. Ja.
2. Zur Durchführung von Inspektionen gemäß § 16 der 12. BImSchV.
3. Risikokriterien sind Stoffe (Art, Menge, Eigenschaften), Wirkungspfade, Art und Organisation des Betriebes sowie die Nachbarschaft des Betriebes einerseits, technische und organisatorische Maßnahmen zur Gefahrenabwehr andererseits.
Eine Wichtung erfolgt durch die Punktzahl, die je nach den Risikokriterien vergeben wird.
Verschiedene Teilsummen dieser Punkte werden addiert bzw. subtrahiert.
Mit dem Endergebnis kann mittels einer Tabelle eine Inspektionshäufigkeit von > 1x / Jahr bis min. 1x / 5 Jahre ermittelt werden. Da die ermittelte Inspektionshäufigkeit im hiesigen Dienstbezirk i.d.R. überboten wird, dient das Verfahren somit der Festlegung einer Mindest-häufigkeit.
4. Es handelt sich um eine Excel-Anwendung, die nach der Novelle der Störfall-Verordnung im Jahr 2000 vom damaligen StUA Herten den anderen Überwachungsbehörden des Landes NRW per Internet zur Verfügung gestellt wurde.
5. Die Methode hat sich seit fast zehn Jahren in der Praxis bewährt.
6. Bei wesentlichen Änderungen des Betriebes muss eine erneute Bestimmung der Inspektionshäufigkeit erfolgen.
7. Die Risikobewertung durch § 16 (2) Nr.1 Satz 2 der 12. BImSchV, die Methode nicht.
8. Die Eingabemaske umfasst drei Excel-Blätter, die Ausgabe ist ein Einzahlwert (= die Zahl der Jahre zwischen zwei Inspektionen).
9. Eine Anwendung auf Standardbasis sollte unbedingt beibehalten werden.
10. Nein.

5.5. GERMANY - Hessen

1: yes

2: Inspections Art. 18 Seveso-II (§16 Störfallverordnung)

3: siehe Anlage zu diesem Fragebogen!

4: siehe Anlage zu diesem Fragebogen!

5: In Hessen wird seit 2000 mit der beschriebenen Gefahrenbewertung gearbeitet. Die Methode hat sich in der Praxis bewährt, eine Bewertung wurde jedoch nicht durchgeführt.

6: Sofern sich an den drei Parametern der Gefahrenbewertung nichts ändert, bleibt das Ergebnis bestehen.

Anlage zum Fragebogen:

Systematische Gefahrenbewertung der Betriebsbereiche in Hessen

Dieses Verfahren wurde von der hessischen Umweltallianz entwickelt, siehe auch:

http://www.umweltallianz.de/imperia/md/content/umweltallianz/5_services/2_abfallwirtschaft-ubilanz/inspektion_nach_st_rfally_2006.pdf

Zur Durchführung der geforderten systematischen Bewertung der Gefahren schwerer Unfälle werden drei Parameter herangezogen, die die Grundlage der Ermittlung des Gefahrenpotenzials eines Betriebsbereichs bilden:

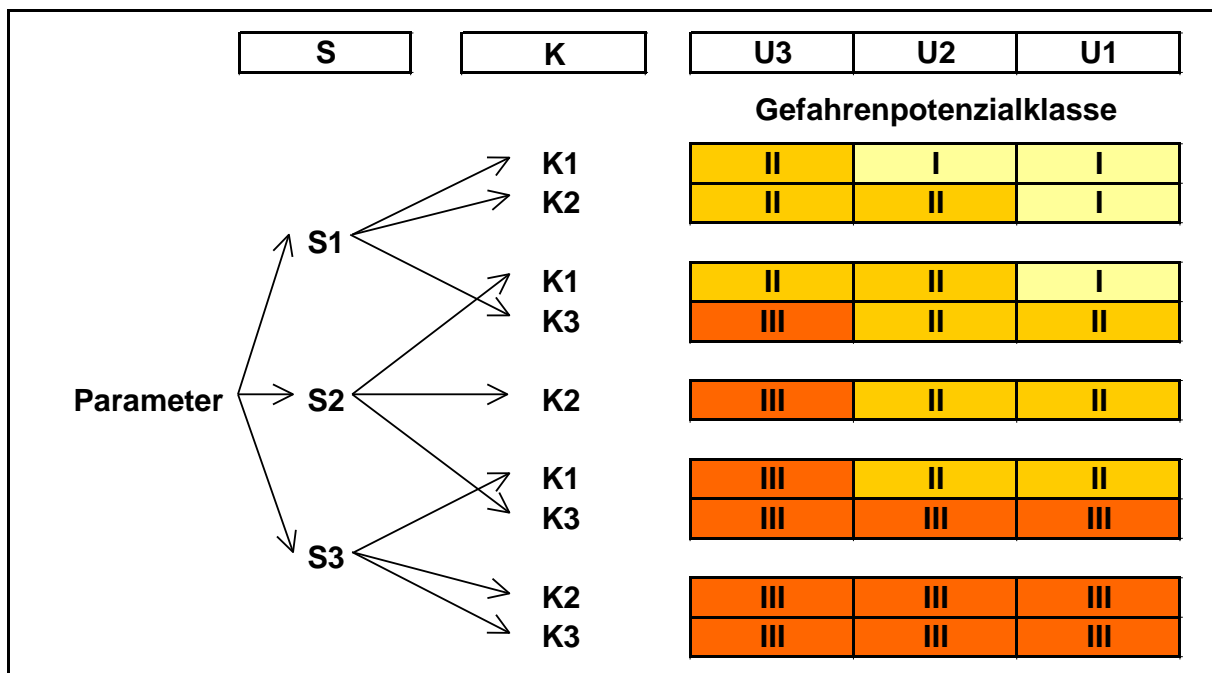
- Stoffe (Menge)
- Komplexität (Stoffmerkmale, Verfahren)
- Umgebung (Nutzung)

Für jeden dieser Parameter werden nach folgenden Kriterien Kennbuchstaben vergeben:

Parameter	Kennbuchstabe	Kriterium / Beschreibung
Stoffe	S1	Stoffmengen > Mengenschwelle Spalte 4 (Anhang I) und < Spalte 5 (Anhang I) (Betriebsbereiche mit Grundpflichten)
	S2	Stoffmenge > Mengenschwelle Spalte 5 (Anhang I) und < 3 x Mengenschwelle Spalte 5 (Anhang I) (Betriebsbereiche mit erweiterten Pflichten)
	S3	Stoffmengen ≥ 3 x Mengenschwelle Spalte 5 (Anhang I) (Betriebsbereiche mit erweiterten Pflichten)
Komplexität	K1	Wenige stoffliche Gefährlichkeitsmerkmale. Einfacher stofflicher Umgang wie z.B. Mischen, Lagern.
	K2	Verschiedene stoffliche Gefährlichkeitsmerkmale. Einfache stoffliche Umwandlungsprozesse, Abfüllung, einfache Infrastruktur
	K3	Viele verschiedene stoffliche Gefährlichkeitsmerkmale oder herausragende Merkmale wie z. B. giftige / sehr giftige Gase. Häufig wechselnde oder komplexe stoffliche Umwandlungsprozesse, vernetzte Infrastrukturen
	U1	Gebiete ohne besondere Schutzobjekte (Industriegebiet ohne weitere Betriebsbereiche, z.B. landwirtschaftliche Nutzung)

Parameter	Kennbuchstabe	Kriterium / Beschreibung
Umgebung	U2	Gebiete mit Schutzobjekten (z. B. Wohngebiete oder öffentliche Verkehrsflächen in größerer Entfernung, Gewerbegebiete)
	U3	Gebiete mit besonderen Schutzobjekten (z. B. Wohngebiete in geringer Entfernung, wichtige öffentliche Verkehrsflächen), Betriebsbereiche mit Dominoeffekt

Mit Hilfe der Kennbuchstaben wird wie folgt die Gefahrenpotenzialklasse des Betriebsbereichs (I – niedrig, II – mittel und III – hoch) ermittelt:



Für die klassifizierten Betriebsbereiche werden in Abhängigkeit von der Gefahrenpotenzialklasse vorab folgende Inspektionsintervalle festgelegt:

Gefahrenpotenzialklasse	Inspektionsintervalle
I "niedrig"	eine Prüfung innerhalb von 5 Jahren über alle relevanten Module
II "mittel"	zwei Prüfungen innerhalb von 5 Jahren, die relevanten Module werden auf die zwei Prüfungen verteilt
III "hoch"	jährliche Prüfungen, je eines der relevanten Module wird pro Jahr repräsentativ für den gesamten Betriebsbereich geprüft

5.6. GERMANY - Munster

1. Ja

2: Für Inspektionen gemäß der 12. BImSchV

3: Systematische Bewertung der Gefahren im Inspektionshandbuch des StUA

Herten: Blatt 1:

Stoffe mit Mengen, Wirkungspfad und Betriebsbedingungen
Betriebliche Gegebenheiten wie Art des Betriebes, personelle/organisatorische Vorkehrungen zur Gefahrenerkennung
Gefahrenabwehr
Schutzobjekte und Risiko erhöhende Faktoren in der Nachbarschaft

Blatt 2:

Bewertung der Inspektionsergebnisse für die Bereiche Technik, Organisation und Management; mängelfreie Ergebnisse führen zu einer begrenzten Fristverlängerung (auf keinen Fall ergibt sich eine längere Frist als 5 Jahre)

4: Es handelt sich um eine Excel-Datei, im internet als pdf-Dokument verfügbar, auf Anfrage Weitergabe der Excel-Version

5: Es handelt sich um eine seit vielen Jahren mit gutem Erfolg angewendete Methode, die mit geringem zeitlichem Aufwand und ohne große Detailkenntnisse der Firmen durchzuführen ist.

6: Ein Update ist selten erforderlich, da sich die relevanten Parameter nur in wenigen Fällen verändern. Nach relevanten Veränderungen der Stoffe oder des Betriebes muss eine Neubewertung durchgeführt werden. Nach durchgeführten Inspektionen wird die Bewertung gemäß Blatt 2 ergänzt und dadurch modifiziert.

7: Es handelt sich nicht um eine gesetzliche, jedoch um eine interne, Vorgabe

8: 3 Excel Blätter mit üblicherweise 6 Seiten (davon 4 Seiten für Blatt 1) je Betriebsbereich, der Input erfolgt im Wesentlichen über auswählen der zutreffenden Informationen

9: Bitte keine zusätzliche/spezielle Software!! Es soll unkompliziert, universell und leicht anpassbar sein. Spezielle Software bedeutet einen erhöhten Aufwand zur Schulung, hat viele Fehler, da die Programmierer unsere Arbeitsweise und unsere Bedürfnisse nicht kennen und ist erfahrungsgemäß absolut unflexibel!

10: Aus unserer Sicht ist die "systematische Bewertung der Gefahren" für eine grundsätzliche Einstufung der Risiken von Firmen gut geeignet. Spezielle Marker zur Bewertung einzelner Anlagen oder Bauteile können für eine Schwerpunktaktion interessant sein, führen als grundsätzliche Bewertungsparameter aber eher zu einer vermeintlichen Sicherheit. Es zeigt sich immer mehr, dass Organisation/Management, Arbeitsbelastung, Erfahrung und die innere Einstellung der Bediener zur Anlage/Firma einen größeren Einfluss auf die Sicherheit haben als messbare Parameter. Ein Bewertungssystem muss auf jeden Fall unkompliziert und schnell bedienbar sein, die frage/Bewertung von zu vielen Details führt zu einer geringen Akzeptanz und dazu, dass Eingaben von zweifelhafter Qualität erfolgen um die Bewertung.

5.7. GERMANY – Schleswig-Holstein

1: Yes

2: For the planning of the SEVESO-Inspections

3: a) Kind of Seveso plant-dangerous substances and the amount of these substances- neighbourhood-kind of hazards(danger depends on explosion, fire, water/airpollution and hazards for the for people +nature),number of plant in an industrial area, fire brigade etc.
b) System similar the seven-up model -similar to the model of the former StUA Herten in NRW , but we use the experience of the first inspection and then we decide of a prolongation or shortening of the inspection intervals. (responsible for 30 of upper and 15 of lower lever)
c)Yes, but it also depends of the on the experience of the inspector at the plant
d) Addition and dividing the weighting factors
e) We use the results in addition to our former inspection experience to rank the inspection intervals.

4: no - for 45 plants it is not effective and you can't add the experience weighting factor!

5: Now we have some experience with the inspections and the described method -seven up- was used in the beginning . Now we use the experience and make our evaluation.
If yes, what was the outcome?

6: not yet

7. no

8: 1 sheet for one Seveso facility

9: no- we see no advantage, because our number of Seveso facilities is too small.

5.8. GERMANY - Cologne

1: Yes

2: IPPC-Installations

- Art. 13 IPPC-Directive
- Federal Immissions Control Act including operator obligations concerning waste management
- State water law (State of North Rhine-Westphalia)

Seveso-Installations :

- Art. 18 Seveso-II-Directive
- Hazardous Incident Ordinance

3.1 IPPC-installations

3.1.1 Risk criteria:

- Basic environmental relevance (kind of IPPC installation)
- Distance to sensitive objects/areas
- Number of substances released into the air
- Number of substances continuously measured
- Waste water relevance
- Quantity of hazardous/non-hazardous waste
- Compliance with regulations
- Readiness of the operator to comply
- Number of neighbourhood complaints
- EMAS or EN ISO 14001 certification prolongs the inspection cycle

Comment: We use two size criteria - number of sub-installations and number of facilities for handling substances hazardous to water - to estimate the time required for the inspections.

3.1.2 Scoring System:

Allocation of 1 up to 5 points according to the risk to each risk criterion; allocation of three size classes to each size criterion; yes or no to certification criterion.

3.1.3 Weighting factors:

There are no weighting factors but IPPC installations with 5 points lead to a higher risk category (see below) and an EMAS certification leads to a lower risk category.

3.1.4 Mathematical algorithm:

For the risk criteria the points are added and the mean value over all is calculated; for size criteria the highest value is taken into account; Certification leads to a lower risk category.

3.1.5 Ranking and classification:

The risk mean values of the installations are allocated to three risk categories: high, medium and low, leading to an inspection frequency of every 1, 2 or 3 years; inspection hours (24, 36, 48 h) are allocated to the three size classes.

3.2 Seveso-installations:

3.2.1 Risk criteria:

- Substances above Annex 1 row 2 or row 3 of the Seveso II Directive
- Physical state and toxicity of the substance
- Safety measures of the establishment
- Neighbourhood of the establishment
- Results of the last inspection
- Operating type

Averting of a danger (type of the fire brigade)

3.2.2 Scoring system:

Allocation of 0 up to 10 points to each criterion according to the impact.

3.2.3 Weighting factors:
No weighting factors

3.2.4 Mathematical algorithm:
Summation of risk groups and adding the results (in case of accident risks) or subtracting them (in case of benefits).

3.2.5 Ranking and classification:
The results are allocated in a two dimensional way to risk categories which represent inspection intervals of one inspection in 1 up to 5 years.

4.1 IPPC-inspections:

Microsoft Excel; the tool is available on Basecamp, on the ECENA website and on www.dunsche.eu.

4.2 Seveso-inspections (see annex): Microsoft Excel; the tool is theoretically available on a website per download

Comment: We use Geographic Information Systems (GIS) to find out the distance to sensitive areas.

5.1 IPPC-inspections: We started with the new risk assessment in 2010; an evaluation is planned for 2011.

5.2 Seveso inspections: We started with the risk assessment in 2000. Changes of the tool are necessary but postponed until the end of the easyTools project.

6: After every inspection the installation is re-assessed according to the results. To provide a continuous update-process we've installed a working group, which meets once a month. The feedback from the inspectors is discussed there and integrated in the process. In addition we plan to update the two risk assessment tools according to the results of the easyTools project.

7: According to the German environmental legislation the risk assessment methodology isn't set by law, there is just a remark in the German hazardous incidents ordinance.

8: One Excel sheet for each installation and establishment respectively. Data in OpenOffice-format (ODS). The sheet contains the criteria, the related points and the calculation (IN.SYS version 7). Statistically ranking of results and an inspection schedule are only possible by transferring the data into an extra Excel sheet. This should be made different in the easyTool.

9: The tool should fulfil two conditions: 1. The data of all installations and all establishments and so on should be in the tool at the same time for later recalculations, weightings or setting of priorities. This makes table calculation or databases preferable. 2. The tool should be easy to use by very different users around Europe. This makes standard software like Excel or Access or the open source versions of them preferable. If different users should enter data independent from each other a database seems to be the better choice.

10: First and foremost the tool should be easy to use and flexible. We are looking forward to our next meeting in Warsaw (Horst & Wulf).

Annex

Two excel-calculation-sheets for Seveso-installations (both to be found on Basecamp)

1. RAT-Seveso-basic-Cologne
2. RAT-Seveso-dynamic-Cologne

5.9. GERMANY - Bremen

1: yes

2: environmental inspections in the fields of air pollution and noise for IPPC and other installations

3: What risk criteria do you use? 3 types: 1) IPPC, 2) the big installations of “the first column” of national law, 3) the smaller ones of “the second column” of national law

What scoring systems do you use? no

Do you use weighting factors and how are they determined? no

How does your mathematical algorithm (the way your system calculates) work?

Type 1 inspection every year, type 2 three years period, type 3 six years period

How do you use the output of your risk assessment in terms of ranking and classification? no

4: no

5: no

6: only when there are new installations to inspect

7: no

8: 1 big table

9: general software or linked to our IT-tool “IFAS” designed by Kisters, Aachen

10: the tool should be ready to be filled in with additional information, e.g. name of inspector, category by national law, and others

5.10. GERMANY - Rheinland Pfalz

1: Ja

2: Ja, Für den Vollzug der Störfall-Verordnung insgesamt und insbesondere bei der Inspektionsplanung und Durchführung.
 Betriebsbereiche mit Grundpflichten werden im 5-Jahresintervall einer Inspektion unterzogen.
 Betriebsbereiche mit erweiterten Pflichten werden entsprechend ihrer Größe und Komplexität jährlich bzw. nach Programm (siehe Antwort 3) innerhalb von 5 Jahren inspiziert.

3: Betriebsbereiche, die auf Grund ihrer Größe und Komplexität nicht jährlich komplett inspiziert werden können, werden nach folgendem Überwachungsprogramm innerhalb von 5 Jahren inspiziert.
 Kategorie 1 (1- bis 2-jähriges Inspektionsintervall) Betriebsbereichs- oder Anlagenteile mit einem Stoffpotential \geq Spalte 5.
 Kategorie 2 (3- bis 5-jähriges Inspektionsintervall) Betriebsbereichs- oder Anlagenteile mit einem Stoffpotential \geq Spalte 4 und \leq Spalte 5.
 Kategorie 3 (Revisionstätigkeiten im Rahmen des Arbeits- und Immissionsschutzes der Gewerbeaufsicht wie sie vor Inkrafttreten der Störfall-VO bereits durchgeführt wurden)
 Betriebsbereichs- oder Anlagenteile mit einem Stoffpotential $<$ Spalte 4.
 Bei allen Kategorien fließen zur Vorbereitung und Schwerpunktbildung bei der Durchführung folgende Aspekte mit ein:
 Ergebnisse aus vorangegangenen Inspektionen
 Unfallaufkommen/Schadensereignisse
 Ergebnisse aus Prüfungen von Sachverständigen (Genehmigungsverfahren)
 Ergebnisse aus der Prüfung des Sicherheitsberichtes
 Harmonisierende Kriterien der EU (Artikel 9 Abs. 6 der RL 96/82/EG)
 ggf.
 Ergebnisse aus werksinternen Studien

4: Ja (teilweise) Intranet!
 Für die Prüfung der Sicherheitsmanagementsysteme wurde in Rheinland-Pfalz ein Abfrage -Tool entwickelt und verwendet. Für die Prüfung der technischen Systeme wurde ein Musterinspektionsbericht entwickelt, der den Rahmen der Prüfungsmodalitäten vorgibt.
 - Beide Werkzeuge sind DV-verfügbar.

5: Seit 2002 werden in RP Inspektionen nach der voran beschriebenen Systematik durchgeführt.

6: Bei Bedarf, d. h. wenn gesetzliche Änderungen dies notwendig machen.

7: Im Artikel 18 der Seveso II Richtlinie bzw. im § 16 der Störfall-Verordnung wird die Einrichtung eines Überwachungssystems (Inspektionen) zur planmäßigen systematischen Prüfung der technischen, organisatorischen und managementspezifischen Systeme des Betriebsbereiches gefordert.

8: Die Grundlagen der Risikobewertung sind im Wesentlichen der Sicherheitsbericht und die dort ermittelten sicherheitsrelevanten Anlagenteile sowie das Kapitel mit der Gefahrenanalyse zu diesen Anlagenteilen. Für die Verwaltung der Störfallbetriebe wird eine spezielle Software verwendet, die Dokumentation der risikobehafteten Betriebsbereichs- und Anlagenteile erfolgt in Excel-Tabellen.

9: Zurzeit werden verschiedene Software Tools verwendet. Für die Betriebsverwaltung AISI-I (zukünftig LISA?). Für Störfallszenarien VDI 3783 bzw. 8FeuEx.
 Eine Präferenz für eine bestimmte Software kann z. B. nicht benannt werden.

5.11. GREECE

1: Yes, in terms that:

- a. High environmental impact activities or installations are prioritized in the inspection plan / programme,
- b. Installations / activities in protected / designated / sensitive areas are also prioritized in the inspection plan / programme

2: In the annual inspection plan as well as in the monthly inspection programmes

3: risk criteria that are used:

- Effluents / impacts in the environment, (magnitude, size, capacity of the installation)
- Location of the installation
- Raw material and energy / fuel types that are used
- Pollution abatement available technology that is in place and used by the installation
- Impact of emission / effluents to local and regional public health

What scoring systems do you use:

- It is not used a specific mathematical tool (scoring system). The risk approach is theoretical based on the comparison among similar activities.

Do you use weighting factors and how are they determined?

- No – as above

How does your mathematical algorithm (the way your system calculates) work?

- No – as above

How do you use the output of your risk assessment in terms of ranking and classification

- In general terms the output of the risk assessment is used on the prioritization of inspection work among similar activities/installations

4: No

5: No

6: Up to now, the updating of the risk assessment is based on the practical experience of the Hellenic Environmental Inspectorate personnel.

7: No

8: There is not specific IT tool in use, the risk assessment is being made by brainstorming in regular inspector meetings.

9: The general software will be more helpful/user friendly

5.12. IRELAND

1. Yes

2: Principally, enforcement of:

- IPPC/Waste licences, discharges from urban waste water treatment plants, control of drinking water treatment plants
Also for:
- DREAM is used for the risk classification of urban waste water treatment plants which require licensing and enforcement by the EPA. It is the Dynamic Risk Assessment Methodology. The DREAM is a dynamic system that takes data available from various databases already being maintained by the EPA and does not require in general new information from the licencees. In effect we are moving away from an annual environmental report (AER), and will collect data on going via a new overarching data and process collection and management system (LEMA) which could produce a virtual dynamic AER. GIS databases are also used as a data source for DREAM. This is the model that the original RBME IPPC risk assessment should be moving towards (i.e. web based and a minimum of data input for licensees where information already existing in electronic form in an accessible environment)
- Risk assessment for historic landfills
https://www.epa.ie/downloads/advice/waste/waste/EPA_CoP_waste_disposal_sites.pdf EPA maintains a GIS for the purpose of registering historic landfills under Section 22 of the Waste Management Act.
- <http://www.epa.ie/downloads/pubs/land/mines/> Recently an inventory of Irelands Historic Mine Sites has been published. The investigations assess the potential risk posed by these sites to humans, animal health and the surrounding environment.
The efforts directed at control of drinking water treatment are directed through the Remedial Action List (RAL) . This is in effect a risk ranking of drinking water supplies. A water supply is included on the RAL for one or more of the following reasons (among others):
 - Failure to meet the E. Coli standard at some point in the last two years;
 - Inadequate treatment (e.g. no treatment other than chlorination or poor turbidity removal or excessive levels of aluminium in the treated water)
 See <http://www.epa.ie/news/pr/2008/april/name,24320,en.html>

3. The development of the methodology commenced in 2005 and it has undergone a number of testing regimes and revisions since its inception. The concept of assigning enforcement categories to licensed facilities was the subject of a joint EPA/IBEC organised conference which was held in May 2006. The OEE took account of a number of valuable comments received both at and following this conference and in September 2006 undertook a pilot phase testing of the methodology with a number of IBEC nominated licensees. The methodology was further revised following the pilot phase testing.

On the basis of international best practices, an Environment-Based Assessment Tool was developed to assist with prioritising enforcement activities. The methodology allocates an enforcement category to licensed facilities on the basis of five environment-based attributes described below:

1. Complexity;
2. Emissions;
3. Location;
4. Operator Management; and
5. Enforcement Record.

The enforcement category of each IPPC and Waste licensed facility is assessed under each of the above headings, and an overall enforcement category is obtained.

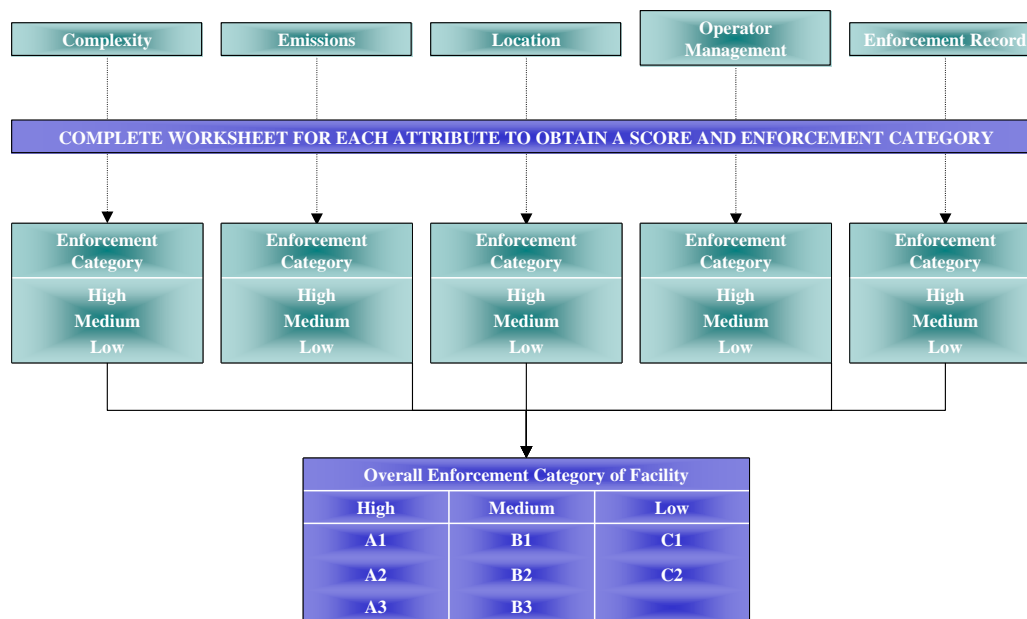


Figure 0-1 Summary of Methodology for Determining Enforcement Category of Licences

For local authorities and the EPA, enforcement activities are co-ordinated via local, and national inspection plans. The inspection plans provide the platform for a national systematic approach to inspection and enforcement and are based on the EU Recommendation for Minimum Criteria for Environmental Inspections in Member States (2001/331/EC) (RMCEI). The RMCEI sets out the requirement for regulatory agencies in carrying out their inspection and enforcement activities, with particular emphasis on regulated installations. The EPA through the Environmental Enforcement Network has guided the development and implementation of local authority inspection plans under RMCEI since 2006. Ireland was the first member state to have comprehensive inspections plans across local authority level. The inspection and enforcement plans provide a basis for assigning priorities based on risk and allocating available resources according.

For IPPC/Waste licences all the detail is included in the tool/guidance note located at <http://www.epa.ie/whatwedo/enforce/lic/how/categories/>

We also have developed Risk Based approaches in other areas such as for permitted waste facilities¹, historic landfill sites² and drinking water supplies³. Work on developing additional risk based approaches have commenced in other sectors including historic mine sites and municipal waste water treatment plants (DREAM method – not finalised yet).

4. Yes. A digital Assessment Tool in the form of an excel spreadsheet has been developed. This is given to all licensees. For a particular facility, the digital Assessment Tool is completed for each of the attributes. A score is obtained and an individual high, medium or low enforcement category is assigned for each attribute, depending on the score. In the case of emissions, there are separate forms for emissions to air, discharges to water, discharges to sewer and waste management.

For IPPC/Waste licences all the detail is included in the tool/guidance note located at <http://www.epa.ie/whatwedo/enforce/lic/how/categories/>

5. As stated earlier the development of the methodology commenced in 2005 and it has undergone a number of testing regimes and revisions since its inception. The concept of assigning enforcement categories to licensed facilities was the subject of a joint EPA/IBEC⁴ organised conference which was

¹ See EEN website www.enforcementnetwork.ie – only available to regulators

² Code of Practice: Environmental Risk Assessment for Unregulated Waste Disposal Sites (EPA, April 2007)

³ Guidance for Local Authorities on Risk Screening Methodology for Cryptosporidium, EPA 2008

⁴ <http://www.ibec.ie>

held in May 2006. The OEE took account of a number of valuable comments received both at and following this conference and in September 2006 undertook a pilot phase testing of the methodology with a number of IBEC nominated licensees. The methodology was further revised following the pilot phase testing.

6. It has not been updated for 3 years i.e. the method. The actual results from each facility is updated every year.

The methodology is completed on an annual basis for all licensed facilities. The information required to complete the methodology will become available as the Annual Environmental Report is being prepared. As with the AER the methodology will be based on the data for the previous calendar year. The overall enforcement category of the facility depends on the combination of categories obtained for each attribute. In general, when the environment based assessment results in attributes that result in predominantly high enforcement categories, the overall outcome will allocate the facility a high enforcement category outcome. The reverse is true where the attributes predominantly result in the low enforcement category outcome.

7. No...

8. 1 excel sheet for each facility. This is then collated manually by the EPA. **This is not efficient.** It should be web based submission which upon upload is automatically loaded into a database in the EPA.

9. Dont know. Ultimately it should be web based submission and capable of reading information from other web based documents and databases e.g. the Annual Environmental Report

10. We have had an interesting process of introducing the risk method and associating annual charges with the Risk Category. It had to be done gradually and is quite labour intensive to maintain.

5.13. POLAND

1: Yes.

2:

- For planning all kind of inspection's tasks.
- For categorization all facilities into 5 categories.

3.1. What risk criteria do you use?

1. Risk of major industrial accident (Seveso II directive) – quantity of hazardous substances
2. Severity to the environment (probability of occurrence the risk to the environment)
 - A) Sensivity of the area
 - Location of the facility
 - State of the environment
 - Frequency of complaints
 - B) Scale of the environmental impact
 - Type of installation (e.g. PRTR [IPPC included] or smaller)
 - Discharge of wastewater to the surface water, soil or sewage system belonging to another entity
 - Emission of ashes or gases to the air
 - Generation of hazardous waste or non- hazardous waste
 - Emission of noise to the environment
 - C) Security measures applied in the facility
 - Possession of installations protecting the environment from the pollution
 - Environmental management in the facility
 - Assessment of compliance with the environmental requirements
3. Law requirements

3.2 What scoring systems do you use?

We have scores from 11 (the smallest risk) to 275 points (very large risk).

Table: Multi-criteria risk assessment – calculation results

Risk of major industrial accident	Nuisance for the environment /u/				
	very large	large	average	Small	very small
very large	275	220	165	110	55
Large	220	176	132	88	44
average	165	132	99	66	33
Small	110	88	66	44	22
very small	55	44	33	22	11

3.3 Do you use weighting factors and how are they determined?

We use weighting factors : points from 1 to 5 for each risk criteria listed above.

3.4 How does your mathematical algorithm (the way your system calculates) work?

Risk assessment follows the formula below and the basic score-based assessment of “weight” pertaining to individual criteria on a 1 – 5 point scale:

$$k = r \times u$$

$$k = r \times (w + s + z)$$

$$k = r \times (\sum w_{1-3} + \sum s_{1-5} + \sum z_{1-3})$$

where:

k – final scoring decisive for a place of the facility in the “ranking”

r – risk of major industrial accident – see attached table no. 1

u – nuisance for the environment: $u = w + s + z$

w – sensitivity of the neighbouring area: $w = \sum w_{1-3}$

w₁ – location of the facility – see attached table No. 2

w₂ – state of the environment – see attached table No. 3

w₃ – frequency of motions for intervention – see attached table No. 4

s – scale of environmental impact, $s = \sum s_{1-5}$

- s₁ – type of project or installation – see attached table No. 5
- s₂ – discharge of waste to waters, soil or sewage system belonging to another entity – see attached table No. 6
- s₃ – emission of ashes or gases to air – see attached table No. 7
- s₄ – generating hazardous waste or other-than-hazardous waste – see attached table No. 8
- s₅ – emission of noise to the environment – see attached table No. 9
- z – security measures applied in the facility: $z = \sum z_{1-3}$
- z₁ – existence of installations protecting the environment from pollution – see attached table No. 10
- z₂ – environmental management in the facility – see attached table No. 11
- z₃ – assessment of observance of environmental requirements – see attached table No. 12

3.5 How do you use the output of your risk assessment in terms of ranking and classification? We use it for categorization of facilities and to decide how often company should be inspected (see table below).

Tabel. Categories in the multi-criteria analysis and the resulting frequency of inspections

Specification	Final score	Assumed frequency of inspections
Risk category I	≥ 177	once per year
Risk category II	111-176	every 2 years
Risk category III	67 -110	every 3 years
Risk category IV	23 - 66	every 4 years or less
Risk category V	≤ 22	not assumed

4: We use a software tool for performing the risk assessment. It is a part of the big IT tool for our inspection's tasks. It is not available by internet now, but we are working on new "small" IT tool just for the risk assessment which will be available by internet.

5: We have started to use the risk assessment as a tool in 2009. While preparing this tool we evaluated the methodology by handed calculation for some facilities and comparison the results with our best knowledge about the evaluated company. In our opinion it works well and fulfils our needs.

6: After each inspection we assess the company again and up-date scores.

7: No. It is our internal methodology.

8: It is a big database for our inspection's tasks. Now we are working on new "small" IT tool just for the risk assessment which will be available by internet.

9: I think that general software is the best.

10: Law requirements which tell us how often you should go for inspection (does not matter if it is needed from your risk assessment) are probably very difficult subject for some of us. It is a problem in Poland especially for WEEE and life-ending vehicles facilities. According to Polish law we have to inspect all of them at least once a year. I wonder if enforcement authorities in other countries have also such requirement. This has nothing to do with real risk assessment.

Appendixes to answer to question 3 (12 tables):

Table No.1 - Risk of major industrial accident [r]

Table No.2 - Location of the facility [w₁]

Table No.3 - State of the environment [w₂]

Table No.4 - Frequency of motions for intervention [w₃]

Table No.5 - Type of Project or installation [s₁]

Table No.6 - Discharge of waste-water to waters, soil or sewage system belonging to another entity [s₂]

Table No.7 - Emission of ashes or gases to air [s₃]

Table No.8 - Generating hazardous waste or non-hazardous waste [s₄]

Table No.9 - Emission of noise to environment [s₅]

Table No.10 - Possession of installations protecting the environment from pollution [z₁]

Table No.11 - Environmental management in the facility [z₂]

Tabel No.12 - Assessment of observance of environmental requirements [z₃]

Tabel No.1

Risk of major industrial accident –[r] table No. 1

No.	Risk of major industrial accident	Risk assessment	Score
1.	Upper-tier establishments	very large	5
2.	Lower-tier establishments	large	4
3.	Facilities from the group of remaining perpetrators of major accidents Facilities which were the location of a major industrial accident over the past 4 years	average	3
4.	Production facilities, fuel bases or stations – other than in item 1-3 using hazardous substances	small	2
5.	Other facilities	very small	1

Tabel No.2

Location of the facility [w₁] – table No. 2

No.	Neighbouring area ¹⁾	Assessment of the neighbouring area	Score
1.	<ul style="list-style-type: none"> - „A” protective zone of spas, premises of hospitals, social care facilities, developed areas related to permanent or temporary stay of children and youth - Developed areas with single-family and multi-family dwellings, as well as farmsteads and multi-apartment residential buildings - Recreational and leisure sites - Housing and service sites - Sites in the centers of cities above 100 thousand inhabitants - Natural protected areas (national parks, nature reserves, Natura 2000 areas, landscape parks) - Static surface waters²⁾ 	very sensitive	5
2.	<ul style="list-style-type: none"> - Highest protection and high protection areas of the Main Reservoirs of Underground Waters - Flowing surface waters²⁾ - Areas in particular risk of nitrates, falling under the nitrate directive - Other naturally protected areas (areas of protected landscape, nature monuments, documentation sites, ecological areas, natural and scenic complexes) - Monuments of material culture 	sensitive	4
3.	Afforested areas, remaining agricultural land	medium sensitive	3

4.	- Idle land, mining grounds	little sensitive	2
5.	- Industrial sites, communication sites	very little sensitive	1

Clarification:

- ¹⁾ one most negative element is decisive for the final assessment
²⁾ direct or indirect waste-water recipient

Tabel No.3

State of the environment [w_2] – table No. 3

No.	State of the environment ¹⁾	Assessment	Score
1.	- Zone C – level of several substances in air exceeds the permitted level increased with a margin of tolerance - Surface waters in class V of the ecological condition or underground waters in class V of poor quality ²⁾ - Violated quality standards of soil or ground in group A,B,C as regards several indicators	absolutely unsatisfactory	5
2.	- Zone C – level of one substance in air exceeds the permitted level increased with a margin of tolerance - Surface waters in class IV of the ecological condition or underground waters in class IV of poor quality ²⁾ - Violated quality standards of soil or ground in group A,B,C as regards one indicator	unsatisfactory	4
3.	- Zone C – level of several substances in air between permitted level and permitted level increased by a margin of tolerance - Surface waters in class III of the ecological condition or underground waters in class III of satisfactory quality ²⁾ - Observed quality standards of soil or ground in group C	satisfactory	3
4.	- Zone B – level of one substance in air between permitted level and permitted level increased by a margin of tolerance - Surface waters in class II of the ecological condition or underground waters in class II of satisfactory quality ²⁾ - Observed quality standards of soil or ground in group B	good	2
5.	- Zone A – level of substance in air does not exceed the permitted level - Surface waters in class I of the ecological condition or underground waters in class I of very good quality ²⁾ - Observed quality standards of ground in group A	very good	1

Clarification:

- ¹⁾ one most negative element is decisive for the final assessment
²⁾ water classification pursuant to the conditions referred to in regulations of the Minister of Environment:

- dated 23.07.2008 on the criteria and methods of assessment of underground waters (Journal of Laws, No. 143, item 896)
- dated 20.08.2008 on the classification method of condition of uniform parts of surface waters (Journal of Laws, No. 162, item 1008)

Tabel No.4

Frequency of motions for intervention [w_3] – table No. 4

No.	Frequency of motions for intervention regarding environmental pollution in the past 4 years	Assessment	Score
1.	Repeating justified motions for intervention regarding several environmental components	absolutely unsatisfactory	5
2.	Repeating justified motions for intervention regarding one environmental component	unsatisfactory	4
3.	Single justified motions for intervention regarding one of the components	satisfactory	3
4.	Unjustified motions for intervention	good	2
5.	No motions for intervention	very good	1

Tabel No.5

Type of Project or installation [s₁] – table No. 5

No.	Type of project or installation	Project or installation	Score
1.	PRTR installation allocated to projects which can always have a major environmental impact, which requires drawing up an environmental impact report	very large	5
2.	PRTR installation allocated to projects which can have a potential major environmental impact, which is obliged to draw up the report on the basis of a decision issued by a competent authority (organization for environmental protection)	large	4
3.	<ul style="list-style-type: none"> - Other projects which can always have a major environmental impact, which require drawing up an environmental impact report - Other projects which can have a potential major environmental impact, which are obliged to draw up the report on the basis of a decision issued by a competent authority (organization for environmental protection) - Projects which have impact on NATURA 2000 area, which are obliged to draw up the report on the basis of a decision issued by a competent authority (organization for environmental protection) 	average	3
4.	Other projects which can have a potential major environmental impact, which may require drawing up an environmental impact report, released from the obligation to draw up the report based on the decision of a competent authority (organization for environmental protection)	small	2
5.	Other projects	very small	1

Clarification:

Ref. point 1

Score for more IPPC installations located at the premises of the facility: 2 installations – 8 points; 3 installations – 12 points; 4 installations – 16 points, etc. (with each subsequent IPPC installation score is increased by 4 points)

Ref. point 2

Score for more IPPC installations located at the premises of the facility: 2 installations – 6 points; 3 installations – 10 points; 4 installations – 14 points, etc. (with each subsequent IPPC installation score is increased by 4 points)

Tabel No.6

Discharge of waste-water to water, soil or sewage system belonging to another entity [s₂] – table No. 6

No.	Discharge of waste-water to water, soil or sewage system belonging to another entity *	Emissions volume	Score
1.	<ul style="list-style-type: none"> - Discharge of biologically degradable municipal or industrial waste-water to water or soil from waste-water treatment plant with load no less than 100 thousand PE - Discharge of biologically non-degradable waste-water to water from industrial waste-water treatment plants, containing particularly harmful substances from list I - Discharge of waste-water to water or soil from industrial waste-water treatment plant, in volumes of at least 10 000 m³/d 	very large	5

2.	<ul style="list-style-type: none"> - Discharge of biologically degradable municipal or industrial waste-water to water or soil from treatment plant with load exceeding 15 thousand PE and less than 100 thousand PE - Discharge of biologically non-degradable waste-water to water or soil from industrial treatment plants, containing particularly harmful substances from list II - Discharge of waste-water to water or soil from industrial treatment plant, in volumes exceeding 1 000 m³/d and less than 10 000 m³/d 	duża	4
3.	<ul style="list-style-type: none"> - Discharge of biologically degradable municipal or industrial waste-water to waters or soil from treatment plant with load exceeding 2000 thousand PE and less than 15 thousand PE - Discharge of waste-water to waters or soil from industrial treatment plants, in volumes exceeding 100 m³/d and less than 1000 m³/d - Discharge of industrial waste-water containing substances particularly harmful to water environment, to external sewage system from list I or II - Discharge of rainfall waste-water to waters or soil from treatment devices with a nominal flow exceeding 300 l/s. 	average	3
4.	<ul style="list-style-type: none"> - Discharge of biologically degradable municipal or industrial waste-water to waters or soil from waste-water treatment plant with load no less than 2 thousand PE - Discharge of biologically non-degradable industrial waste-water not containing substances particularly harmful to water environment from treatment plant to waters, in amounts not exceeding 100 m³/d - Discharge of remaining rainfall waste-water to waters or soil 	small	2
5.	<ul style="list-style-type: none"> - Discharge of industrial waste-water not containing substances particularly harmful to water environment, to external sewage system - Discharge of rainfall waste-water to an external sewage system - Discharge of household waste-water to an external sewage system 	very small	1

* one most negative criterion is decisive for the final assessment and score

Tabel No.7

Emission of ashes or gases to air [s₃]- table No. 7

No.	Emission of ashes or gases to air	Emissions volume	Score
1.	Facilities obliged to carry out continuous measurements of energetic or technological emission of ashes or gases to air	very large	5
2.	Facilities obliged to carry out periodic measurements of energetic or technological emission of ashes or gases to air	large	4
3.	Other facilities obliged to obtain permit for emission of ashes or gasses to air	average	3
4.	Facilities obliged to notify the operating installation in a competent environmental authority as regards emission of ashes or gases to air	small	2
5.	Facilities not obliged to obtain permit or notify the operating installation in a competent environmental authority as regards emission of ashes or gases to air	very small	1

Tabel No.8

Generating hazardous waste or non-hazardous waste [s₄] – table No. 8

No.	Generating hazardous waste or other-than-hazardous waste	Emissions volume	Score
1.	Required permit for generating hazardous waste or non-hazardous waste, including for waste recovery or disposal	very large	5
2.	Required permit for generating hazardous waste or non-hazardous waste	large	4
3.	Required decision approving the management program for hazardous waste or non-hazardous waste	average	3
4.	Required delivery of information about hazardous waste or non-hazardous waste	small	2
5.	Remaining generation of hazardous waste or non-hazardous waste, not requiring delivery of information	very small	1

Tabel No.9

Emission of noise to environment [s₅] – table No. 9

No.	Emission of noise to environment	Emissions volume	Score
1.	Violating conditions of the decision about the permitted level of noise emitted to the environment or violating emission standards ¹⁾ at nighttime	very large	5
2.	Violating conditions of the decision about the permitted level of noise emitted to the environment or violating emission standards ¹⁾ at daytime	large	4
3.	Level of noise emitted to the environment close to the permitted level or to emission standards ¹⁾	average	3
4.	Level of noise emitted to the environment much lower than permitted	small	2
5.	No sites protected acoustically within reach of the facility – decision about the permitted level of noise emitted to the environment not required	very small	1

Clarification:

¹⁾ Regulation of the Minister of Environment dated 14 June 2007 on the permitted noise levels in the environment (Journal of Laws No. 120, item 826)

Tabel No.10

Possession of installations protecting the environment from pollution [z₁] table 10

No.	Possession of installations protecting the environment from pollution	Risk	Score
1.	No required installations protecting the environment	very large	5
2.	Insufficient installations protecting the environment	large	4
3.	Overloading of installations protecting the environment	average	3
4.	Sufficient installations protecting the environment – minor operating irregularities	small	2
5.	Sufficient installations protecting the environment – correct operation	very small	1

Tabel No.11

Environmental management in the facility [z₂] – table No. 11

No.	Specification	Assessment
1.	Elements of the assessment of the environmental management system in the facility:	yes - 0 No -1
a.	proper qualifications of employees	
b.	proper supervision over the work of installation, self-monitoring, if required	
c.	maintenance and service plans, running repairs, maintenance work, etc.	
d.	capital expenses, including investments pertaining to environmental	

	protection	
e.	environmental management systems (ISO 14001, EMAS)	
	Total score:	
2.	Result of the assessment of the environmental management system in the facility in terms of environmental risks:	Final score
a.	very large risk (total score 5)	5
b.	large risk (total score 4)	4
c.	average risk (total score 3)	3
d.	small risk (total score 2)	2
e.	very small risk (total score 0 or 1)	1

Tabel No.12

Assessment of observance of environmental requirements [z₃]- table No. 12

No.	Assessment of observance of environmental requirements	Risk	Score
1.	Facility not possessing the required permits* for using the environment	very large	5
2.	Facility permanently violating the conditions of the possessed permits* for using the environment	large	4
3.	Facility occasionally violating conditions of permits* or not implementing follow-up recommendations	average	3
4.	Facility which failed to meet the duty of notifying the installation, failed to deliver information or handles in violation of the notification or delivered information	small	2
5.	Facility meeting the environmental requirements	very small	1

* also including: decision about the permitted noise level emitted to the environment, decision approving the instruction for the operation of the landfill, decision approving the program for management of hazardous waste or non-hazardous waste

5.14. PORTUGAL

(used old questionnaire)

1. Yes,
2. Planning of the IPPC inspections.
3. We use the following criteria:

1º COMPLEXITY AND SIZE

This evaluation aspect incorporates the complexity and size of a facility. In general terms we can say that the more complex an installation or activity is the greater the regulatory effort will be to inspect and enforce the licence conditions of these installations or activities. Besides the complexity also the size of the facility influences the effort that is required.

The complexity score is based on the type of installation or activity that is mentioned in the table "IGAOT/PRTR". This table is using the activities that are mentioned in Annex 1 of the EPRTTR regulation.

The size score is based on the surface area of the installation

SIZE (surface area) - [*Dimension*]

1. < 1 ha
2. $1 \leq \text{Surface Area} < 10$ ha
3. $10 \leq \text{Surface Area} < 20$ ha
4. $20 \leq \text{Surface Area} < 50$ ha
5. ≥ 50 ha

COMPLEXITY (look up in table IGAOT/PRTR) [*Impact*]

1. Complexity is zero (least complex)
2. Complexity is small
3. Complexity is average
4. Complexity is high
5. Complexity is very high (most complex)

2º EMISSIONS TO AIR

This evaluation aspect incorporates the emissions to air.

In general we can say that the higher the level of emissions and/or the number of different substances released, the greater the regulatory effort of the Inspectorate is.

In order to determine the " Impact" or level of emissions we look at the number of substances that are emitted by the facility and that are mentioned in table " Emissions to Air" (taken from PRTR Regulation)

In order to determine the " Dimension" we look at the number of substances that are emitted by the facility and that are mentioned in table " Emissions to Air" (taken from PRTR Regulation), which load is actually above the threshold mentioned in table " Emissions to Air" (taken from PRTR Regulation)

NUMBER OF SUBSTANCES RELEASED WITH A LOAD ABOVE THRESHOLD AND MENTIONED IN TABLE "EMISSIONS TO AIR" (taken from PRTR Regulation) - [*Dimension*]

1. None or one (1) of the substances that are emitted is above the threshold
2. Two (2) of the substances that are emitted is above the threshold
3. Three (3) of the substances that are emitted is above the threshold
4. Four (4) of the substances that are emitted is above the threshold
5. Five (5) or more than five of the substances that are emitted is above the threshold

NUMBER OF SUBSTANCES EMITTED AND MENTIONED IN TABLE "EMISSIONS TO AIR" (taken from PRTR Regulation) - [*Impact*]

1. The facility emits one (1) substance or none
2. The facility emits two (2) substances
3. The facility emits three (3) substances

4. The facility emits four (4) substances
5. The facility emits five (5) or more than five substances

3º - EMISSIONS TO WATER

This evaluation aspect incorporates the emissions to water. In general we can say that the higher the level of emissions and/or the number of different substances released, the greater the regulatory effort of the Inspectorate is.

In order to determine the " Impact" or level of emissions we look at the number of substances that are emitted by the facility and mentioned in table " Emissions to Water" (taken from PRTR Regulation)

In order to determine the " Dimension" we look at the number of substances that are emitted by the facility and mentioned in table " Emissions to Water" (taken from PRTR Regulation) and whose load is actually above the threshold mentioned in table " Emissions to Water" (taken from PRTR Regulation)

NUMBER OF SUBSTANCES RELEASED WITH A LOAD ABOVE THRESHOLD AND MENTIONED IN TABLE "EMISSIONS TO WATER" (taken from PRTR Regulation) - [*Dimension*]

1. None or one (1) of the substances that are emitted is above the threshold
2. Two (2) of the substances that are emitted is above the threshold
3. Three (3) of the substances that are emitted is above the threshold
4. Four (4) of the substances that are emitted is above the threshold
5. Five (5) or more than five of the substances that are emitted is above the threshold

NUMBER OF SUBSTANCES EMITTED AND MENTIONED IN TABLE "EMISSIONS TO WATER" (taken from PRTR Regulation) - [*Impact*]

1. The facility emits one (1) substance or none
2. The facility emits two (2) substances
3. The facility emits three (3) substances
4. The facility emits four (4) substances
5. The facility emits five (5) or more than five substances

4º WASTE MANAGEMENT

This evaluation aspect incorporates the production of Waste. In general we can say that the more waste (hazardous and non-hazardous waste) is produced, the greater the regulatory effort of the Inspectorate is.

In order to determine the " Impact" we look at the amount of hazardous waste.
In order to determine the " Dimension" we look at the amount of non-hazardous waste

NON-HARZARDOUS WASTE [*Dimension*]

1. The facility produces < 20 tons of waste a year
2. The facility produces ≥ 20 and < 500 tons of waste a year
3. The facility produces ≥ 500 and < 1400 tons of waste a year
4. The facility produces ≥1400 and < 2000 tons of waste a year
5. The facility produces ≥ 2000 tons of waste a year

HARZARDOUS WASTE - [*Impact*]

1. The facility produces < 5 tons of waste a year
2. The facility produces ≥5 and < 20 tons of waste a year
3. The facility produces ≥ 20 and < 35 tons of waste a year
4. The facility produces ≥35 < 50 tons of waste a year
5. The facility produces ≥ 50 tons of waste a year

5º LOCATION

This evaluation aspect incorporates the location of the facility in relation to its surroundings. In general we can say that the more sensitive the area in which a facility is located is, the higher the impact on the environment can be.

Sensitive area´s that can be considered are:

- River area´s (sensitivity of receiving water, based on the water quality classification)
- Ground water for human consumption area´s

- Areas classified as being part of Natura 2000 Sites - Special Conservation Zone (ZEC) and Special Protected Area's (ZPE) - including the sites of the National List of Sites.
- National ecological reserves (REN)
- National protected areas which are part of the National Net of Protected Areas (RNAP)
- Public Protected Water Reservoir
- Coastal Water (Directive 76/160/CEE)
- Human occupation/presence (dwelling house hotel or hostel, health building, educational establishment, place of worship or entertainment or any other facility or area of high amenity)

DISTANCE TO SENSITIVE AREA - [*Dimension*]

1. The distance between the facility and the sensitive area >10 km.
2. 1 km < The distance between the facility and the sensitive area ≤10 km
3. 100 m < The distance between the facility and the sensitive area ≤ 1 km
4. The distance between the facility and the sensitive area ≤100 m
5. The facility is within the boundaries of the sensitive area

SENSITIVE AREA - [*Impact*]

1. Not applicable.
2. The sensitivity of the area is low (e.g. rivers with bad water quality)
3. The sensitivity of the area is average (e.g. rivers with average water quality, coastal water)
4. The sensitivity of the area is high (e.g. rivers with an excellent water quality, ground water protection area's and human occupation/presence)
5. The sensitivity of the area is very high (e.g. national ecological reserve area's, areas classified as being part of Natura 2000 Sites - Special Conservation Zone (ZEC) and Special Protected Area's (ZPE) - including the sites of the National List of Sites, national protected areas which are part of the National Net of Protected Areas (RNAP) and public protected water reservoir)

6° ATTITUDE OF OPERATOR

This evaluation aspect incorporates the attitude of the operator towards the environment.

In general we can say that the better the attitude towards the environment is the better the self-regulation of the facility is. Aspects that can be of importance are:

- the presence of a certified environmental management system (for instance ISO 14001 and EMAS).
- the awareness of the facility's impact on the environment
- the communication with the community (neighbourhood dialogue)
- transparency and open communication with the Inspectorate
- (continuous) improvements on voluntary basis
- the level of self regulation of the facility.

SUSTAINABILITY OF THE ATTITUDE - [*Dimension*]

1. There is long history of good attitude
2. The attitude is solid and will not change easily
3. The attitude is linked to only a few persons in the facility
4. The attitude can change easily
5. The attitude can change very easily

ATTITUDE TOWARDS THE ENVIRONMENT - [*Impact*]

1. The attitude of the operator is high

There is a certified EMS, a high awareness of the impact on the environment and communication with the community is good. There is transparency and open communication with the Inspectorate, continuous improvements on voluntary basis and self regulation. No verified incidents have occurred in the last year.

2. The attitude of the operator is good

there is awareness of the impact on the environment and communication with the community. There is transparency and open communication with the Inspectorate, some improvements on voluntary basis and a certain level of self regulation. No more than 1 verified incident has occurred in the last year.

3. The attitude of the operator is average

There is some awareness of their impact on the environment. The operator needs some encouragement to make improvements and there is an acceptable communication with the Inspectorate. No more than 2 verified incidents have occurred in the last year.

4. The attitude of the operator is low

There is awareness of their impact on the environment but no initiative to make improvements without the pressure from the Inspectorate, there is no transparency towards the Inspectorate. No pro-active attitude. More than 2 and less than 5 verified incidents have occurred in the last year.
5. The attitude of the operator is bad in all the above mentioned aspects and/or a SEVESO accident or more than 5 verified incidents have occurred in the last year.

7° COMPLIANCE BEHAVIOUR

1 - The behaviour is very low (In case there is an environmental permit: more than 8 non complied conditions of the environmental permit. In case no environmental permit has been issued: more than 8 infringements verified in the previous inspection)

2 - The behaviour is low (In case there is an environmental permit: between 4 and 8 non complied conditions of the environmental permit. In case no environmental permit has been issued: between 5 and 8 infringements verified in the previous inspection)

3 - The behaviour is average (In case there is an environmental permit: between 2 and 3 non complied conditions of the environmental permit. In case no environmental permit has been issued: between 2 and 4 infringements verified in the previous inspection)

4 - The behaviour is good (In case there is an environmental permit: 1 non complied condition of the environmental permit. In case no environmental permit has been issued: no more than 1 infringement verified in the previous inspection)

5 - The behaviour is high (In case there is an environmental permit: all conditions of the environmental permit are complied. In case no environmental permit has been issued: no infringements verified in the previous inspection)

3. We don't know the mathematical algorithm of the database because that was developed by the Dutch colleagues. If functions as a matrix for all the criteria, except for the compliance behaviour. That's why for each risk criteria there are 2 entrances (dimension and impact).

4. We use an access database that was given to us by the Dutch colleagues, where we loaded our risk criteria..

10. To make the risk criteria as simple and effective as possible.

5.15. ROMANIA

1: Yes.

2: We use the risk assessment approach for planning the inspections of installations and activities that fall under the following regulatory fields:

- IPPC Directive
- Seveso Directive
- Large Combustion Plants Directive
- VOC Directive
- Landfill waste Directive
- Directive establishing a scheme for greenhouse gas emission allowance trading within the Community
- Urban sewage treatment plant
- Biodiversity, Natura 2000 and OMG
- Others under National environmental law.

3: We use for risk assessment the following risk criteria:

a. Environmental impact criteria, which take into consideration:

- installation complexity,
- location related to sensitive areas (residential and / or natural protected areas),
- air emissions (qualitative, not quantitative),
- water emissions (qualitative, not quantitative)
- area of polluted soil,
- amount of hazardous waste,
- amount of non-hazardous waste,
- category of sewers,
- smells,
- noise and vibrations,
- inspector's score

b. Performance of the installation criteria, which take into consideration:

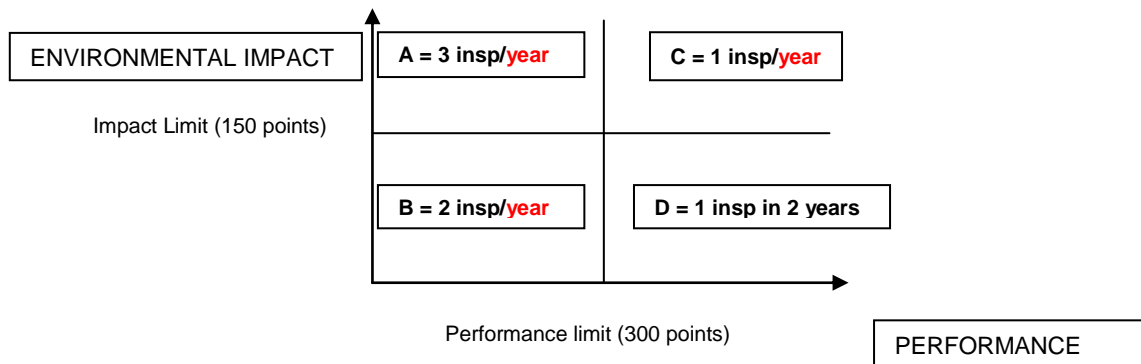
- applying BAT, EMAS/ISO,
- number of fines issued,
- amount of fines issued,
- number and types of complementary follow-up actions,
- number of penal offence, number of incidents and accidents,
- air emissions monitoring frequency,
- water emissions monitoring frequency,
- soil emissions monitoring frequency,
- number of complaints,
- inspector's score

For each criteria mentioned above the score is given by comparison with pre-established thresholds/limits. The system scoring gives points from 1 to 10.

We use weighting factors for risk calculation. The weighting factors were established empirically based on experience from previous inspections.

For risk calculation we use a logical algorithm (based on mathematical function "IF"). The points given for each criterion are multiply by a weighting factor and the result are summarize for each category of risk criteria (impact criteria and performance criteria). The risk category (we use 4 risk categories: A, B, C and D) is established by comparison with a matrix, illustrated below:

The output of our risk assessment tool is a list of all controlled installations ranked based on the risk score for each installation.



For prioritizing the activities in the biodiversity field, we use similar criteria, but based on other kind of indicators.

4: Our risk assessment tool is developed on 2003 Microsoft Excel. The tool is not yet accessible by internet, but is available on NEG`s intranet. If you are interested you could received a copy of our software tool.

5: We have started to use risk assessment methodology only since last year, so probably later this year we can analyze it.

6: At the end of the year the risk criteria values are updated on basis of results of inspections performed within that year.

7: Yes (by Order of Environmental Ministry).

8: For assess the risk we use 4 big excel sheets, 3 excel sheets for input data and 1 excel sheet for output data.

Additional answer Mercia: I design (and experimental use in some practical cases) a mathematical model for study of the pollution phenomena and of their tendencies using the probability calculus. I realized a Poisson model and a P.C. program applicable to the economic operators. Given n time intervals in which, from different reasons, k unwanted events may appear, in this case accidental pollution and/or CMA(maximum allowable concentration for one indicator) exceeding, the probability of having k cases of pollution over the CMA or other conventionally accepted limits is given by a Poisson relation. We can calculate the probability. In my opinion this probability is a very important criteria for risk assessment.

For the λ parameter (the average value of the Poisson repartition $M(X)= \lambda$) I established the intervals that can characterize the environment performance of the economic operator. I also propose the standardization of the interval and of the values of the λ parameter.

The proposal to standardize the intervals and values for the λ parameter can to improve the safety of the purging processes

I consider that my method can compare little and big economic operators, because the environmental performance is given by a mathematical calculus of the probability.

I consider that the method and the value intervals proposed for the λ parameter can be extended in many fields, due to the general character)

9: Our inspection organization had implemented an inspections database that was developed on PHP/MySQL Software which runs under Linux operating system. So I think that an IT tool developed under these conditions is fitting to our organisation. Of course we are aware that using an Excel worksheet is easier, but a database can allow future developments of risk assesment methodology.

10:

- 1) The output of the IT Tool developed under easyTools Project should be a list of controlled installation and activities ranked on the basis of their risk score.
- 2) Gathering the information for risk assessment should be easily achieved.
- 3) More information about IT Tool developed under easyTools Project and training opportunities on using the tool should be available in future.
- 4) Weighting indicators, a subject which needs to be reviewed regularly according to the general/specific objectives of the organisation.
- 5) Achieving environmental risk assessment on different levels of planning the activity of the organization

5.16. SLOVENIA

1. Yes.

2: There is no statutory task for using risk assessment approach. We use risk assessment because it is reasonable.

3: We use five risk criteria:

- subjective evaluation of inspector
 - four criteria about type of installation (landfill, wastewater treatment plant, SEVESO, IPPC)
- We use maximum value scoring system, because we think it is better than total score or average score system.

We do not use weighting factors.

We compare values of risk criteria for evaluated installation. The category of installation depends on the maximum value of risk criteria. We have three categories.

4: Yes. It is not accessible by internet, but by our intranet. Copy is not available.

5: We use it for three years and we got good results.

6: The data for risk criteria are updated through whole year. Risk assessment is done once per year.

7: Risk assessment as approach is set by law general, but methodology is not prescribed.

8: Database.

9: We use MS Access, because it is widely used and we would like to use such software in the future.

10: We will contribute our part through project group work.

5.17. SPAIN (extremeadura)

1. Yes

2. To select the projects or the installations to be environmentally inspected in the scope of the IPPC Directive or the Environmental Impact Assessment Directive

3: What risk criteria do you use: Higher Pollutant potential based on amount of emissions to the environment, which is directly related to the size of the installation or the project. Newer installations or projects. Level of pollution of the place where the installation is or the project is being developed Proximity to protected environment areas due to European, Spanish or Regional rules. Background of non-fulfilment reports

What scoring systems do you use: A qualitative scoring systems is used instead of a quantitative system

Do you use weighting factors and how are they determined: We don't use those factors

How does your mathematical algorithm (the way your system calculates) work: There is no mathematical algorithm

How do you use the output of your risk assessment in terms of ranking and classification: To select the projects or the installations to be environmentally inspected or the frequency of those inspections

4. We don't have a software tool to do the risk assessment, but we use Geographic Information Systems (GIS) to know the proximity to protected environment areas.

5. Not yet

6. The criteria haven't been updated

7. Not yet but it will be in the future Industrial Emissions Directive

8. We use our databases

9. It would be better a specialized software but it's important that the software could import our information from our databases or from our GIS

10. It would be useful that the software would be able to give a schedule with the inspections and the inspectors, taking into non routine inspections

5.18. SPAIN - Basque

1. Yes

2. All inspections but mainly IPPC.

3. What risk criteria do you use: Location, Complexity, Emission to air and water, Waste Management Environmental Management, Compliance

What scoring systems do you use: It is an adaptación of UK EA OPRA system

Location is scored according to the answer to several questions. Most of the questions are related to GIS información. The score is given by the informatic tool once the UTM coordinates of the site are provided.

Complexity. UK EA scoring system was adopted for IPPC sites and a similar scoring system was developed for non IPPC.

Emissions to air and water: PRTR are used and divided by a specific reference value for each contaminant according to its toxicity. All the ratios are added and a band is assigned. If there is not PRTR information, emissions can be calculated from the analytic controls. If there not information about the emissions, worst classification is assigned, taking into account the kind of facility, until information is provided.

Emissions to soil (Waste): Total amount of dangerous and urban waste are estimated, considering the % of recycling for each, and divide each by a value, that is different for dangerous and urban waste. Then, the ratios are added and a band is assigned.

Environmental management: If the operator has a certified system, gets the highest score. Otherwise has to go through several question with three options. The answer has to be documented. The scores are added and with the sum a band is assigned.

Compliance: The inspector lists the non-compliances detected in the visit. Each non compliance is clasified according to a intrinsic severity and another clasification by the inspector. The sum assigns a band.

A total score is obtained with all the points of each attribute. This score allows assigning an overall band to the site.

Do you use weighting factors and how are they determined: Yes we use them.

They were determined according to the importance of the attribute considering the criteria of a panel of inspectors and the distribution of the results of about 300 sites.

How does your mathematical algorithm (the way your system calculates) work: Overall score= x Location + y Complexity + z emissions + f env management + g compliance. It can be seen in the tool I will send.

How do you use the output of your risk assessment in terms of ranking and classification: It clasifies the sites in 5 groups. The inteval values to determine the groups were done considering the distribution of the results of the 300 operators that we had previously. However from the practical point of view we have been considering three groups low, medium and high risk.

4. We have an access tool that is not accessible by internet.

Yes it is possible to have a copy. I will send it next week when I am back at the office. The tool is in Spanish but do not think you will have a lot of problems to understand the basic. If you need any help, just contact me.

5. Yes. We have used. It is useful to plan sectorial inspections. Now we are moving more to results based management projects. This is normally a geographical area with an "environmental problem" is studied to contribute to control the problem.

One of the main issues with the tool is that even the time needed to collect the data to keep the database update is not high. It is an extra to the rest of the work of the visit that is normally done at the end without the same care that the inspection itself.

6. Every time an inspector visits a site to carry out an inspection: initial or follow up is asked to fill the tool. The first time was done by contracted consultants that performed a diagnostic of the sites.

7. No

8. It is a access database with report outputs. Files can be exported to other systems

9. We are moving it to a web based application. I think that it is in Java using xml files. I will confirm this with informatic unit.

10. The risk approach should be combine with the objectives or results orientated approach to get a complete approach for an efficient and effective inspection.

Risk approach reduces bias, but still has quite a lot within the tool that you decide to use and it is difficult to develop a tool that it is useful for all de activities of the inspection units.

Keeping update the databases is not easy. You can ask the operator to do it, but then you have to rely on the data provided by them.

5.19. SPAIN – Madrid

1. When planning the inspections to be included in our Annual Inspection Program we mainly consider two factors:

1. Environmental procedures to which the installation is bound and has undertaken
2. Undertaken inspections in the installation: number of inspections / elapsed time since the last inspection / inspection result.

We recently developed a prioritization model in order to carry out a selection of actions. Those were defined by applying a prioritization system based on a multi-criteria analysis. The model is currently a draft and was designed together with the drafting of a multi-annual inspection plan. The latter is not approved so far.

2. Our goal is to use this model for the selection of installations that are included in the Environmental Inspection Program on an annual basis. Thus, after establishing the so-called sub-programs and campaigns that constitute the Annual Environmental Program, an IT tool implements the prioritization system and determines which specific installations are to be inspected.

3. When selecting the risk criteria we identified three different ways to implement the risk appraisal system. These three paths are selected according to the type of inspection campaign to be undertaken:

1. Installations which have been subjected to any type of environmental procedure within the Madrid Regional Ministry for the Environment (e.g. Environmental Impact Assessment, IPPC permit, Waste management/production permits, etc). Information on environmental procedures (authorizations for discharges, wastes, etc) is available at different database tables and is to be prioritized based on the information contained in these procedures. In these cases, an ad hoc algorithm was developed for each campaign. It takes into account the following criteria:
 - Non-inspected installations are a priority 1 in order to determine their degree of environmental compliance.
 - Those previously inspected installations in which non-compliance was identified are priority 2
 - The algorithm applies a geographical balance criterion in order to obtain a balanced burden of inspection across all inspection offices (5 in the whole Region).
2. Installations to be inspected on the basis of policy criteria: the selection of activities to be inspected is made on the basis of policy priorities, alignment with other sectoral plans and programs, social demands, etc. This element aims at systematising a set of queries to select installations avoiding overlaps and ensuring some flexibility and capability to adapt to emerging policy priorities.
3. Installations subjected to a pure “risk appraisal system”: for those facilities where only economic data is available and its administrative environmental status is unknown a risk appraisal system is applied. This analysis gives one type of campaigns, the so-called “*business sectors*”. To prioritize these activities the use of socio-economic and environmental information is foreseen. The installations to be included in these campaigns are to be selected on the basis of its pollution potential. These campaigns aim at assessing the environmental situation at a sectoral level and checking the individual compliance of the installations with various environmental standards applying in each particular case. This is calculated based on the following criteria:
 1. Location: Companies located in areas of high industrial concentration and distribution of work in accordance with the various administrative units.
 2. Complexity-magnitude: Size / Relevance.
 3. Applicable regulations (number of environmental norms for an activity).

What scoring systems do you use: As explained in item 3 of the previous answer, A risk appraisal system for installations where no information on environmental procedures is available was developed. The scoring system is based in 3 main aspects:

1. Location: First, firms located in towns with the highest concentration of industry, get a higher score. The score is to be assigned according to ranges of number of companies by town. This score is

flexible and can be modified in the IT Tool in view of the preliminary results when adjusting the final lists of installations to be included.

Companies/town	
$x \geq 500$	40
$300 \leq x < 500$	35
$200 \leq x < 300$	30
$100 \leq x < 200$	20
$50 \leq x < 100$	15
$20 \leq x < 50$	7
$10 \leq x < 20$	3
$5 \leq x < 10$	2
$x < 5$	1

The second step is to ponderate the result according to the burden of inspection in the different “environmental inspection offices”, criterion which aims at obtaining a balanced number of inspection for the available inspectors.

2. Complexity-magnitude: The calculation of priority based on the complexity of the activity is structured around three parameters:

➤ Number of employees (characterizing the size of the company).

Criteria Employees	
$x \geq 250$	20
$100 \leq x < 250$	15
$50 \leq x < 100$	10
$30 \leq x < 50$	7
$20 \leq x < 30$	5
$10 \leq x < 20$	2
< 10	1

➤ Turnover (also characterizes the size of the company).

➤ Number of installations of the same sector which are based on the Madrid Region.: characterizes the frequency of certain types of activity in our territory. The higher number of activities in the region, the higher score assigned. (This criterion aims at inspecting those sectors which are more significant in the region)

3. Number of potential environmental pieces of legislation applying to the installation: A counting of the pieces of legislation applying to each NACE code activity was done an inputs the IT Tool. The environmental acts applicable to a sector are weighted on the basis of two parameters: (1) the number of rules and (2) number of areas applicable depending on the sector (water, accidents, environmental impact assessment ...). This criterion aims at focusing the inspection on the more environmentally-regulated activities since this is an indirect idea of their potential harmfulness to the environment.

Do you use weighting factors and how are they determined: Pending the results of the implementation of this tool for risk analysis, there is a possibility of assigning a weight factor to some of the parameters referred to the mathematical algorithms, but for the moment being we are not pondering any factor over others.

How does your mathematical algorithm (the way your system calculates) work:
Criterion location:

$$Criterio_{LOCALIZACIÓN} = K_1 \cdot Puntuación_{CONCENTRACIÓN INDUSTRIAL} + K_2 \cdot Puntuación_{SEDE AMBIENTAL}.$$

As said above, for the moment the weigh factor K1 and K2 are equal to 1 and therefore no ponderation is implemented. Upon results of the first experiences we could consider a different weight for each parameter.

The following table summarizes the score ranges for each band:Score

PRIORITY BASED APPROACH TO LOCATION.

Score	
$60 \leq x < 70$	Very High.
$36 \leq x < 60$	High
$25 \leq x < 36$	Medium
$8 \leq x < 25$	Low
$2 \leq x < 8$	Very Low.

With the rest of the systematic approaches used is similar.

How do you use the output of your risk assessment in terms of ranking and classification?

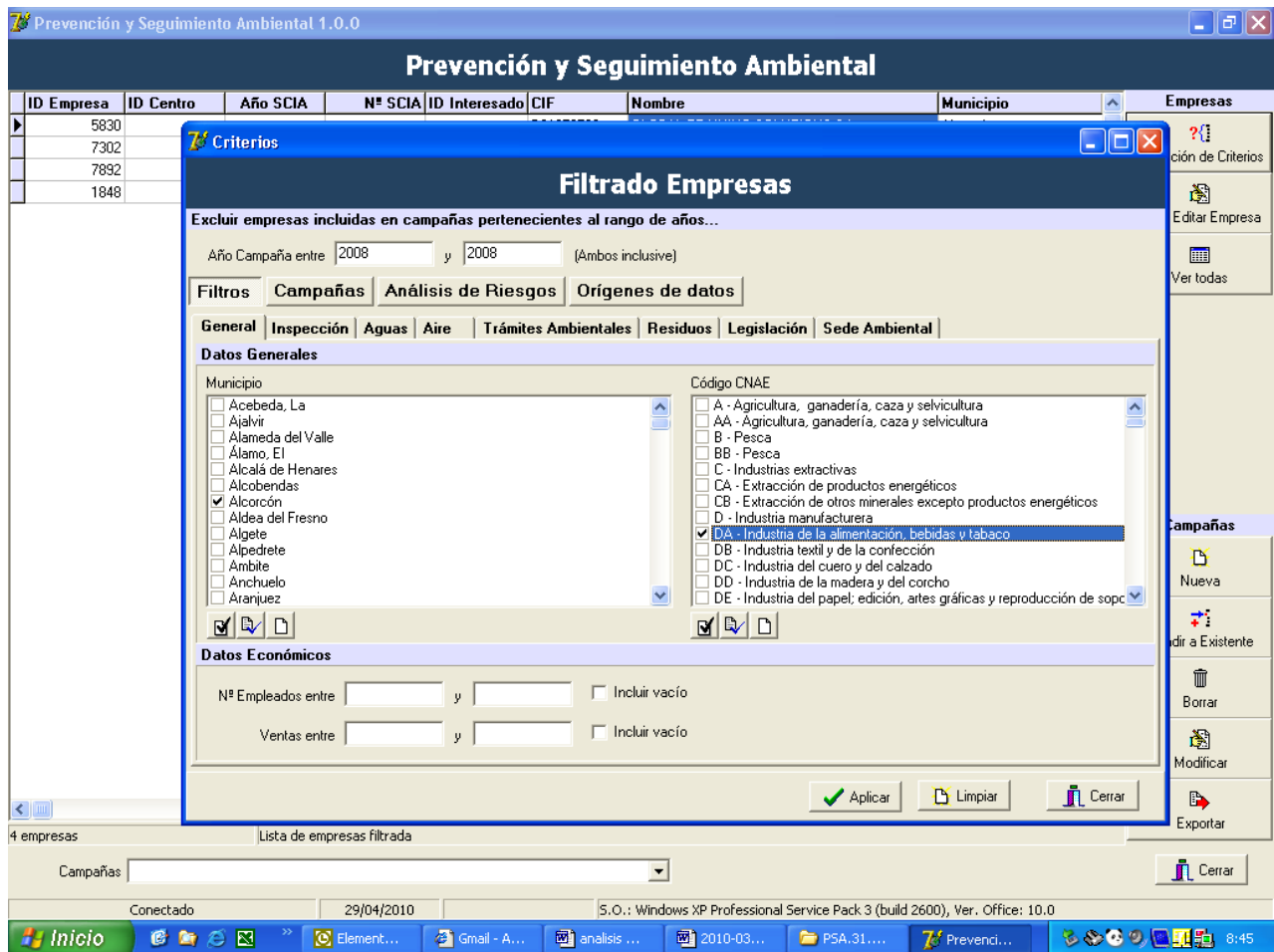
After adding the score for each of the criteria, risk analysis would give a priority list of companies sorted by NACE and by location, then establishing a priority rank from very high to very low. In addition, installations which belong to NACE sectors already inspected in previous years under other programs of environmental inspections deduct some punctuation (flexible element of the IT Tool).

4. The prioritization model is based on an Access database containing installations' information.

This DB was fed with socio-economic data gathered by specialized companies and a compilation of data contained in the different datasets of the Regional Ministry for the Environment. This database is used by the IT Tool which runs the queries and assigns points to the individual facilities according to the risk appraisal system.

This IT tool is not accessible through the Internet. Due to confidentiality issues, copies of the IT Tool cannot be shared although demonstration sessions might be organised..

Below a mock-up of the IT Tool is presented:



5. No, we didn't evaluate the risk assessment methodology because it is still a draft which will be shortly applied.

6. Since the IT Tool is still a prototype to be applied, updates are not foreseen. The main problem would be the update of the primary database, which is fed with information from other external and internal databases of the Ministry of Environment and requires resources for data processing and harmonisation.

7. This methodology is not covered by any state standards or regional legislation.

8. The data output is displayed as a list which contains all previously selected fields in a filter. Once you get the listing, the file can be exported to an Access DB table.

9. We believe that an IT tool based on general software like MS Excel or Access is more cost-effective.

10. Our major difficulty when developing the model was the treatment of the information contained in the various databases and the quality of those.

Among different issues, the DB contain companies which are no longer existing, out of date information regarding the economic data, unclear administrative information regarding the environmental procedures, etc. The information was compiled into a single database which is associated with the risk analysis software. This process was a major challenge since the format of the different DB, even within the regional ministry, was different, there was no unique criterion to build the databases and some practices made difficult the harmonization activities. For this reason, we can not ensure that there are no records that are repeated or factual errors in some entries.

Our Regional Ministry is working in an entire revision of its data storage procedures in order to gain clarity and

6. Respondents without a Risk Assessment approach

*In the feedback of the different IMPEL member countries only the answers are taken in.
Go to section 2 to see the questions.*

6.1. GERMANY - Hamburg

1. No.

9: MS Office

10: No.

6.2. ITALY

1. At present we don't use a risk assessment approach, but we are trying to implement a program. We have already highlighted the main issues and parameter to insert into theoretical model
2. We want use it for Seveso inspections and for IPPC inspections-\
3. As the first parameter we have chosen the older inspection as the most critical one. Then we highlighted other parameters, as EMAS certificate, ISO 14000, the results of previous inspection and others.
The scoring system is a numerical one. Each parameter has a specific weight (chosen by user) and at each run of the program we have a score results. We have improved our system after that we saw that the numerical system cannot be used with integer number but with some commas because we had many factory with the same score.
The mathematical algorithm is a summed weight of each parameter. Each weight of parameter is chosen before start the run and can be changed.
The use of the output is about to chose the most critical factories to inspection.
4. We have implemented a software tool in Access, but is not accessible by internet. I try to send you by e-mails.
5. Not yet
6. At each inspection, at the end, we update the database and automatically it update the critical parameter.
7. No
8. We have a access database-
9. We think that is better a simple system with general software, because the kind and complexity of calculation is not hard when the roadmap is choosen.
10. Yes, we have and we send to you.

6.3. LATVIA

1: No. We have the Manual of environmental inspectors. There are including same criteria of risk assessment of inspections. We use short-term and long-term planning of inspections.

3: What risk criteria do you use?

1. by inspection types – integrated inspections, thematic inspections, follow-up inspections or inspections needed to control the execution of orders and unplanned inspections
2. by frequency of inspections:
 - a. A (IPPC installations) category– 1 times a year,
 - b. B (middle sized installations) category – 1-2 times a year,
 - c. C (small installations) category – once in 2-4 years
 - d. SEVESO enterprises - 1 times a year Safety report enterprises and once in 3 years Programmes enterprises
3. by load of enterprise on the environment
4. by branches of industry
5. by size of an enterprise
6. by frequency of production accidents
7. by seasonal character of activity of an enterprise
8. by regular complaints
9. by changes of operators etc.

Do you use weighting factors and how are they determined?, Yes.

1. enterprises number per 1 inspector
2. control (check-up) number per 1 inspector

4: No

5: No

9: MS Office, MS Excel

6.4. MACEDONIA

1. Unfortunately in our general plans for supervision we still not use risk assessment approach from the classic point of view. This means that during the planning process we use data from last inspections, incidents, compliance, ..., but we do not use any software for this issue.

9. Our mention is that is more useful at the moment in regards with inspectors knowledge, easiness of use, data input, ..., we prefer software on the basis of MS Office, but will be useful in near future to make attention for other programming software using by EU member state environmental inspections.

10. Unfortunately in our country, we still haven't General Environmental Risk Assessment-(GERA) Analyses or Report and Plan for preventive actions and measures in accordance with our plans as part of our planning. We make efforts in near future to prepare GERA based on our Internal Inspectorate Databases for IPPC, SEVESO and other installations, historical potential risks in municipality by municipality and also based on Easy Tool Software and EU experiences for frequency on supervision in different installations.

6.5. SLOVAKIA

1: No

9: We prefer a tool developed on the basis of general software.

6.7. TURKEY

1: No, we still don't have any kind of risk assessment tools to plan environmental inspections.

9: MS Office type software is easy to modify, update or use but more complex software needs more IT support. However the important point is web interface. The software must be used in web interface and also should be easily connected with other competent bodies' (except environmental) databases.

10: In our country we still don't have any software tool and also a system, but there are some thesis works in progress. The first aim of our thesis is to develop a risk assessment tool regarding Turkish Law, and then make it on flexible online software. Then the second aim is preparing its legislative bases and make it an obligation for all provincial directorates of the ministry.