**First mission to implement a risk-based planning of environmental inspections**

*Project MK-10-IB-EN-01*

*Activity no: 2.1 (mission 2.1.5)*

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**List of Acronyms**

|  |  |
| --- | --- |
| EC  | European Commission  |
| FFH-areas | Fauna, Flora, and Habitat Directive-areas, Directive 92/43/EEC |
| IC | Inspection Council |
| IED | Industrial Emissions Directive 2010/75/EU |
| IMPEL | EU Network for the Implementation and Enforcement of Environmental Law |
| IPPC  | Integrated Pollution Prevention and Control  |
| IRAM | Integrated Risk Assessment Method |
| LoE | Law on Environment |
| LoIS | Law on Inspection Supervision |
| LSGU | Local Self-Government Unit |
| MoEPP  | Ministry for Environment and Physical Planning  |
| MLSGU | Ministry of Local Self-Government Units |
| NGOs  | Non-Governmental Organisations  |
| RMCEI | Recommendation 2001/331/EC of the European Parliament and the Council providing for minimum criteria for environmental inspections in the Member States |
| SEI  | State Environmental Inspectorate  |
| TA | Technical Assistance |
| TFS | Transfrontier Shipment of Waste |
| ZELS | Association of the Units of Local Self-Government of the Republic of Macedonia |

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# Introduction

The main work of this mission has been dedicated to define risk assessment criteria and the corresponding weights that need to be applied for inspection planning in the Republic of Macedonia. This has been done for IPPC-A and IPPC-B installations and for activities requiring Elaborates. The risk criteria for IPPC-A and B consist of Impact and Operator Performance criteria. For the risk assessment of activities requiring Elaborates we defined an easy-to-operate criteria so assessments of this group can be done very fast.

To test the defined risk criteria and weight factors and terms, the impact and operator performance criteria have been entered in the online IRAM tool developed within the EU IMPEL network. For every group (IPPC-A and IPPC-b) data from a number of installations has been included in the system to see if all the steering mechanisms are well placed. All this work related to the adaptation of the IRAM tool for its use in the Republic of Macedonia is discussed in section 3 of this report.

Within this mission the complexity coefficient method that is currently used to define the workload of the inspectors has also been discussed and evaluated. The outcome and recommendations of this discussion can be found in section 2 of this report.

We end this report (section 4) with the (next) steps that need to be taken to implement the online risk assessment tool IRAM in the Republic of Macedonia.

1. **Current system to evaluate installations and its effect on the inspection plan**

Currently SEI is not using a risk assessment to prioritise and determine the inspection frequency of the installations falling under its competence. Inspection plans are based on the knowledge and experience of the inspectors. To make sure all inspectors will have an equal working package SEI had to develop a complexity coefficient method upon request of the Inspection Council. In section 2.1 this method is shortly described. In 2.2 alternatives that are more in line with the use of a risk assessment method are presented.

## Complexity coefficient method

In an attempt to create equal working packages for the inspectors at SEI, for every inspection activity a complexity coefficient is determined. The coefficients are added to a total number that should be equal for every inspector. On quarterly bases this number could be for example 200.

The coefficient (Q2 to Q10) is based on the following 4 issues:

* Time needed for an inspection
* Time needed to travel to the site
* Amount of fine that can be applied
* The legislation that needs to be inspected

The result is: Q2 to Q4 are easy inspections, where Q2 has a short travel time and Q4 a travel time more than 2 hours. Q5 to Q7 are the medium inspections, where Q5 has a short travel time and Q7 a travel time more than 2 hours. Q8 to Q10 are the difficult inspections, where Q8 has a short travel time and Q10 a travel time more than 2 hours.

Disadvantages of this system:

* The system suggest that inspection objects and the inspection executed at these objects falling under a certain legislation are all the same. This is not the case.
* All IPPC installation fall in category Q8 to Q10. This means that besides the travel distance the technical complexity of the different IPPC installations is not taken in to account.
* Besides the technical complexity, the size of the site (and therefore the time spent on executing the inspection) is not taken into consideration.
* The type of inspection (Integrated inspection versus a theme inspection) is not taken into consideration.
* The system suggests that all inspectors are equal in specialisation and experience. This will not be the case.
* The system is focussed on output results of the inspection work and not on inspection outcome. The added value of an inspectorate to society is not to execute as many inspections as they possibly can and issue as many fines as they can, BUT to contribute to a better environment.

##  Alternatives to allocate staff when preparing an inspection plan

To overcome all disadvantages mentioned in the previous section the following recommendations are made:

* Allocate inspection staff according to their experience and their knowledge.
* Use IRAM to prioritise the inspection activities.
* Set inspection targets on outcome on the installations that have the highest risk.
* Evaluate inspectors mainly on achieving the inspection targets (on outcome) and secondly on the amount of inspections that are executed.
* Set key indicators for the inspection time that is needed per inspection type and installation category based on the experience of the inspectors. For example, the key indicator for an integrated inspection at a medium size chemical plant could be 30 hours. This includes preparation, execution, reporting and follow-up. Travel time could be added separately. The key indicator for a waste inspection at the same installation could be 18 hours. Technical complexity, inspection complexity and size of the installation should be taken into account when setting the key indicators. These key indicators should be periodically evaluated.
* Plan only 60% of the available inspection time of an inspector. The remaining 40% will be filled with non-routine inspections or special projects.

# Steps taken in this mission towards the implementation of a risk-based planning of environmental inspections in the country

Risk criteria have been developed for the following 3 groups of installations:

1. Installations requiring an IPPC A permit;
2. Installations requiring an IPPC B permit;
3. Activities requiring an Elaborate.

For groups 1 and 2 we developed Impact and Operator Performance criteria that can be used in the templates of IRAM. For the Elaborates group we have developed 1 risk criteria that will determine the inspection frequency of the installations.

## Impact criteria - IPPC A

1. Type and kind of installation

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| The scoring of type and kind of installation is based on the categories that are found in annex I of the IPPC ordinance 89/05. The following categories are defined in the annex:Cat 1 – Energy industries (score 3)Cat 2 – Production and processing of metals (score 4)Cat 3 – Mineral industry (score 3)Cat 4 – Chemical industry (score 4)Cat 5 – Waste management (score 3)Cat 6 – Other activities (score 2)Asphalt is not mentioned in any of the categories but is an IPPC-A installation (score 1). |
| Score | Definition |
| 1 | Asphalt IPPC-A installation |
| 2 | IPPC-A installations under category 6 (other activities) |
| 3 | IPPC-A installations under categories 1 (energy industries), 3(mineral industry) or 5 (waste management) |
| 4 | IPPC-A installations under categories 2 (production and processing of metals) or 4 (chemical industry)  |

2. Impacts on human health or the environment

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| The scoring of Impact on human health and the environment is based on the number of minor, relevant and/or important complaints, environmental accidents or incidents in a certain period of time.The difference between minor, relevant and important is subjective and left to the inspector to decide. |
| Score | Definition |
| 0 | Max 1 minor complaint, environmental accidents or incidents in the last 5 years |
| 1 | More than 1 minor complaint, environmental accidents or incidents in the last 5 years  |
| 2 | At least 1 relevant environmental complaint, relevant environmental accident or incident in the last 5 years |
| 3 | At least 1 important or more than 2 relevant environmental complaints, environmental accidents or incidents in the last 5 years |
| 4 | At least 1 important or more than 2 relevant environmental complaints, environmental accidents or incidents in the last 2 years |

3. emissions to air

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| The scoring of emissions to air is based on the type of measurements that is needed. We distinguish between emissions to air that require only the measurements of 1 or more standard parameters (dust or PM10, NOx, SO2, CO, CO2) and the emissions that require to measure more than only standard parameters. Also the frequency of the measurements is taken into consideration.  |
| Score | Definition |
| 0 | No emissions to air, no measurements needed  |
| 1 | Emissions to air, measurements needed of standard parameters  |
| 2 | Emissions to air, measurements needed of more than only the standard parameters |
| 3 | Emissions to air, continuous monitoring or measurements of standard parameters needed at least every month |
| 4 | Emissions to air, continuous monitoring or measurements of more than standard parameters needed at least every month |

4. Releases to water

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| The scoring of releases to water is based on the substances that are released. The substances are clustered in the following 5 groups: Group 1: Standard parameters (PH, COD, BOD, Suspended matter, Chloride)Group 2: Standard parameters and Nitrate and/or PhosphateGroup 3: Heavy metalsGroup 4: Halogenated compoundsGroup 5: Others e.g. Hydrocarbons |
| Score | Definition |
| 0 | No releases to water |
| 1 | Releases to water with substances falling under group 1 |
| 2 | Releases to water with substances falling under group 2 |
| 3 | Releases to water with substances falling under group 1 or group 2 and at least one of the other groups  |
| 4 | Releases to water with substances falling under group 1 or group 2 and at least two of the other groups |

5. Off-site transfer of waste

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| The scoring of the off-site transfer of waste is based on the amount of non-hazardous or hazardous waste that is produced and transported from the site. |
| Score | Definition |
| 0 | No activity specific waste  |
| 1 | Non-hazardous waste <2,000 t/y or hazardous waste <2 t/y |
| 2 | Non-hazardous waste >2,000 t/y or hazardous waste >2 t/y |
| 3 | Non-hazardous waste >20,000 t/y or hazardous waste >5 t/y |
| 4 | Non-hazardous waste >50,000 t/y or hazardous waste >10 t/y |

6. Input of waste

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| The scoring of the input of waste is based on the amount of non-hazardous or hazardous waste that is transported to the site.  |
| Score  | Definition |
| 0 | No waste input  |
| 1 | Non-hazardous waste <2,000 t/y or hazardous waste <2 t/y |
| 2 | Non-hazardous waste >2,000 t/y or hazardous waste >2 t/y |
| 3 | Non-hazardous waste >20,000 t/y or hazardous waste >5 t/y |
| 4 | Non-hazardous waste >50,000 t/y or hazardous waste >10 t/y |

7. Quality of the local environment (air, water, noise)

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| The scoring of quality to the local environment refers to the fact of whether the quality standards for air, water and/or noise are exceeded or are in danger to be exceeded, or not. All violations of quality standards for air, water and noise shall be taken in to account. The highest violation shall be taken for scoring 3 and 4  |
| Score | Definition |
| 0 | The installation does not have any releases to air and water of substances for which environmental quality standards have been set nor does it have any noise emission.  |
| 1 | The installation is located in an area where environmental quality standards are met. |
| 2 | The installation is located in an area where at least one of the environmental quality standards is in danger to be exceeded |
| 3 | The installation is located in an area where at least 1 environmental quality standard is exceeded  |
| 4 | The installation is located in an area where at least 1 environmental quality standard is exceeded 5 times or more |

8. Sensitivity of the local environment

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| The scoring of sensitive areas is based on the distance between the installation and the sensitive area or if the area is in or outside the direct influence sphere of the installation.Sensitive areas are: Residential area, schools, kindergartens, hospitals, homes for the elderly, drinking water catchment areas, flood areas, nature conservation areas\* or FFH-areas or Bird protection areas (Natura 2000)\*, and wetland programmes\*. In case of more than one object/area the smallest distance counts.*\* shall be assessed one score lower than the others.* |
| Score | Definition |
| 0 | No sensitive areas in the surroundings or distance is >10 km |
| 1 | Sensitive areas outside the influence sphere of emissions or distance is <10 km |
| 2 | Sensitive areas within the influence sphere of emissions or distance is <5 km |
| 3 | Sensitive areas within the influence sphere of mayor accidents or distance is <0,5 km |
| 4 | Sensitive areas close to facility premises, the distance is <100 m |

9. Risk of accidents

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| The scoring of risk of accidents refers to the fact of whether the installations falls under the Seveso Directive or not.  |
| Score | Definition |
| 0 | The installation in a non Seveso installation  |
| 2 | The installations falls under the lower tier of Seveso |
| 3 | The installations falls under the upper tier of Seveso |

## Operator Performance Criteria IPPC A

1. Compliance

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| The scoring of Operator Performance is based on the number and the severity of the non-compliances that has been identified. |
| Score | Definition |
| -1 | No relevant non compliances of the installation with the permit conditions or violation of the operator duties |
| 0 | One relevant non compliance of the installation with the permit conditions or violation of the operator duties |
| 1 | More than one relevant non compliance or one important non compliance with the permit conditions or violation of the operator duties |

2. Attitude of the operator

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| The scoring of attitude of the operator is a subjective choice of the inspector regarding the operator’s attitude towards the environment.  |
| Score | Definition |
| -1 | Operator reacts immediately after recognising a condition of relevant non-compliance |
| 0 | Operator reacts after receiving a warning letter form the competent authority |
| 1 | Operator reacts only after repeated warning letters or after a formal administrative decree of the competent authority  |

3. Environmental Management System

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| The scoring for the Environmental Management System refers to whether the company has implemented an Environmental Management System according to EMAS or ISO-14001, or not.  |
| Score | Definition |
| -1 | Site is registered under EMAS or ISO-14001 and the operator is working successfully with this environmental management system |
| 0 | Site is not registered under EMAS or ISO-14001 but the operator is working successfully with an accepted environmental management system |
| 1 | Site is not registered under EMAS nor ISO-14001 and the operator is not working with an accepted environmental management system |

## Impact criteria – IPPC B

1. Type and kind of installation

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| The scoring of type and kind of installation is based on the categories that are found in annex II of the IPPC ordinance 89/05. The following categories are defined in the annex:Cat 1 – Energy industries (score 2)Cat 2 – Production and processing of metals (score 3)Cat 3 – Mineral industry (score 2)Cat 4 – Chemical industry (score 3)Cat 5 – Waste management (score 2)Cat 6 – Other activities (score 1) |
| Score | Definition |
| 1 | IPPC-B installations under category 6 (other activities) |
| 2 | IPPC-B installations under categories 1 (energy industries), 3 (mineral industry) or 5 (waste management) |
| 3 | IPPC-B installations under categories 2 (production and processing of metals) or 4 (chemical industry)  |

2. Impacts on human health or the environment

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| --- |
| The scoring of Impact on human health and the environment is based on the number of minor, relevant and/or important complaints, environmental accidents or incidents in a certain period of time.The difference between minor, relevant and important is subjective and left to the inspector to decide. |
| Score | Definition |
| 0 | Max 1 minor complaint, environmental accidents or incidents in the last 3 years |
| 1 | More than 1 minor complaint, environmental accidents or incidents in the last 3 years  |
| 2 | At least 1 relevant environmental complaint, relevant environmental accident or incident in the last 3 years |
| 3 | At least 1 important or more than 2 relevant environmental complaints, environmental accidents or incidents in the last 3 years |

3. Emissions to air

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| The scoring of emissions to air is based on the type of measurements that is needed. We distinguish between emissions to air that only require measurements of 1 or more standard parameter (dust or PM10, NOx, SO2, CO, CO2) and the emissions that require to measure more than only standard parameters. Also the frequency of the measurements is taken into consideration.  |
| Score | Definition |
| 0 | No emissions to air, no measurements needed  |
| 1 | Emissions to air, measurements needed of standard parameters  |
| 3 | Emissions to air, measurements needed of more than only the standard parameters |

4. Releases to water

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| The scoring of releases to water is based on the substances that are released. The substances are clustered in the following 3 groups. Group 1: Standard parameters (pH, COD, BOD, Suspended matter, Chloride)Group 2: Standard parameters and Nitrate and/or PhosphateGroup 3: All other releases: e.g. Heavy metals, Halogenates compounds or Hydrocarbons  |
| Score | Definition |
| 0 | No releases to water |
| 1 | Releases to water with substances falling under group 1 |
| 2 | Releases to water with substances falling under group 2 |
| 3 | Releases to water with substances falling under group 3  |

5. Off-site transfer of waste

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| The scoring of the off-site transfer of waste is based on the amount of (hazardous) waste that is produced and transported from the site. |
| Score | Definition |
| 0 | No activity specific waste  |
| 1 | Non-hazardous waste <2,000 t/y or hazardous waste <2 t/y |
| 2 | Non-hazardous waste >2,000 t/y or hazardous waste >2 t/y |
| 3 | Non-hazardous waste >20,000 t/y or hazardous waste >5 t/y |

6. Input of waste

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| --- |
| The scoring of the input of waste is based on the amount of non-hazardous or hazardous waste that is transported to the site.  |
| Score  | Definition |
| 0 | No waste input  |
| 1 | Non-hazardous waste <2,000 t/y or hazardous waste <2 t/y |
| 2 | Non-hazardous waste >2,000 t/y or hazardous waste >2 t/y |
| 3 | Non-hazardous waste >20,000 t/y or hazardous waste >5 t/y |

7. Quality of the local environment (air, water, noise)

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| --- |
| The scoring of quality to the local environment refers to the fact of whether the quality standards for air, water and/or noise are exceeded or are in danger to be exceeded, or not. All violations of quality standards for air, water and noise shall be taken in to account. The highest violation shall be taken for scoring 2 and 3  |
| Score | Definition |
| 0 | The installation does not have any releases to air and water of substances for which environmental quality standards have been set nor does it have any noise emission.  |
| 1 | The installation is located in an area where environmental quality standards are met. |
| 2 | The installation is located in an area where at least one of the environmental quality standards is in danger to be violated |
| 3 | The installation is located in an area where at least 1 environmental quality standard is violated  |

8. Sensitivity of the local environment

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| The scoring of sensitive areas is based on the distance between the installation and the sensitive area or if the area is in or outside the direct influence sphere of the installation.Sensitive areas are: Residential area, schools, kindergartens, hospitals, homes for the elderly, drinking water catchment areas, flood areas, nature conservation areas\* or FFH-areas or Bird protection areas (Natura 2000)\*, and wetland programmes\*. In case of more than one object/area the smallest distance counts.\*: Shall be assessed one score lower than the others. |
| Score | Definition |
| 0 | No sensitive areas in the surroundings or distance is >5 km |
| 1 | Sensitive areas outside the influence sphere of emissions or distance is <5 km |
| 2 | Sensitive areas within the influence sphere of emissions or distance is <0,5 km |
| 3 | Sensitive areas close to facility premises, the distance is <100 m |

## Operator Performance Criteria– IPPC B

1. Compliance

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| --- |
| The scoring of Operator performance is based on the number and the severity of the non-compliances that have been identified. |
| Score | Definition |
| -1 | No relevant non compliances of the installation with the permit conditions or violation of the operator duties |
| 0 | One relevant non compliance of the installation with the permit conditions or violation of the operator duties |
| 1 | More than one relevant non compliance or one important non compliance with the permit conditions or violation of the operator duties |

2. Attitude of the operator

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| The scoring of attitude of the operator is a subjective choice of the inspector regarding the operator’s attitude towards the environment.  |
| Score | Definition |
| -1 | Operator reacts immediately after recognising a condition of relevant non-compliance |
| 0 | Operator reacts after receiving a warning letter form the competent authority |
| 1 | Operator reacts only after repeated warning letters or after a formal administrative decree of the competent authority  |

3. Environmental Management System

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| --- |
| The scoring for the Environmental Management System refers to whether the company has implemented an Environmental Management System according to EMAS or ISO-14001, or not.  |
| Score | Definition |
| -1 | Site is registered under EMAS or ISO-14001 and the operator is working successfully with this environmental management system |
| 0 | Site is not registered under EMAS or ISO-14001 but the operator is working successfully with an accepted environmental management system |
| 1 | Site is not registered under EMAS nor ISO-14001 and the operator is not working with an accepted environmental management system |

## Risk Criteria – Elaborate

1. Type and kind of installation

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| The scoring of type and kind of installation is based on the fact if a permit is needed from MoEPP.In case a permit from MoEPP is needed the installation scores 2 points. In case a permit from MoEPP is not needed the installation scores 1 point.  |
| Score | Definition |
| 1 | Activities requiring elaborates that do not need a permit from the competent authority |
| 2 | Activities requiring Elaborates that need a permit from the competent authority |

Score 1 = min 1 inspection in 36 months

Score 2 = min 1 inspection in 24 months

For these installations we recommend not to assess the risk in IRAM but keep the frequency of the inspections based on the criteria above unless a non-routine inspection needs to be executed because of complaints, accidents or incidents.

## IRAM used for Risk assessment

The risk of the installations IPPC A and B will be assessed using the IRAM methodology. IRAM can be used as an online tool, through the website <https://www.fms.nrw.de/lip/authenticate.do> or using an EXCEL spreadsheet. It was decided during the mission that the online IRAM tool will be used for performing the risk assessment.

Two templates have been prepared that include all the information (impact and operator performance criteria) for IPPC A and IPPC B installations. To test and fine-tune the templates, the data from 5 IPPC-A and 1 IPPCB installations have been entered in IRAM.

The following steering parameters have been used for this:

* For IPPC-A: All weight terms were set on 0, the weighting factor of compliance was set on 2 (attitude and EMS was set to 1). The highest score was set on 4, the Rule was set on 2, and the safety net was set from 1 to 3.
* For IPPC-B: All weight terms were set on 0, the weighting factor of compliance was set on 2 (attitude and EMS was set to 1). The highest score was set on 3, the Rule was set on 2, and the safety net was set from 1 to 3.

# Next steps towards the implementation of a risk-based methodology

Now that the risk criteria have been developed and tested (see section 3) it will be necessary to start implementing the tool IRAM at SEI and the municipalities. Three issues are of importance while implementing the tool:

1. IRAM Accounts have to be setup for the inspectors and the coordinators.
2. Instruction or training needs to be conducted so inspectors and coordinators know how to use the online tool.
3. Data has to be collected for the installations that will be assessed in IRAM.

## 4.1 IRAM Accounts

To start working with IRAM the inspection authority/ies Macedonia will be added by the administrator of IRAM (Horst Büther). The inspection authority will be able to appoint and setup the accounts of the Macedonian coordinators working in IRAM. The coordinators can, on their turn, setup the accounts of the inspectors.

The coordinator will be responsible for the templates of the IPPC-A installations and the IPPC-B installations. The inspectors will be responsible for performing the risk assessment for the separate installations.

## 4.2 Instruction and training

The coordinators and the inspectors need to receive a tailor-made instruction and training to be able to use the IRAM tool and perform a risk assessment. The instructions could be further developed within mission 2.1.6 of this Twinning (November 2015). In the same mission extra training can be given by the administrator (Horst Büther) of IRAM to the key user on the Macedonian side (Durak Arifi). In mission 2.1.7 (beginning of 2016) workshops should be implemented to train all inspectors of SEI.

To train the inspectors of the municipalities it is suggested to have workshops (also in activity 2.1.7) in the 8 regions.

## 4.3 Collecting data

To be able to perform a risk assessment it is important to have all the necessary data of the IPPC A and B installations available. To avoid frustration, the instruction (mentioned in section 4.2) will also contain the type of information that inspectors need to collect before they execute the risk assessment.