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Network for Industrially Contaminated Land in Europe



## SUMMARY REPORT

# **An European Policy Framework on Contaminated Land: Enabling Integrated Land Management and Promoting Sustainability**

15<sup>th</sup> and 16<sup>th</sup> May, 2014  
Berlin, Germany

Supported by:

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety



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Report on the NICOLE Technical Meeting: Contaminated Land Liability Management

## Acknowledgements

NICOLE gratefully acknowledges:

- The speakers for their contributions to the meeting
- The members of the Organising Committee:
  - Laurent Bakker - Tauw (Chair on behalf of NICOLE)
  - Dominique Darmendrail (Chair on behalf of CF)
  - Marijke Cardon (OVAM / CF)
  - Arthur de Groof - Grontmij
  - Elise Noel - Shell
  - Rob Rutjes – LyondellBasell
  - Matthew Pannett - ENVIRON
  - Horst Herzog – Infracore Hoechst

*NICOLE is a network for the stimulation, dissemination and exchange of knowledge about all aspects of industrially contaminated land. Its 100 members of 20 European countries come from industrial companies and trade organizations (problem holders), service providers/ technology developers, universities and independent research organizations (problem solvers) and governmental organizations (policy makers).*

*The network started in February 1996 as a concerted action under the 4th Framework Programme of the European Community. Since February 1999 NICOLE has been self-supporting and is financed by the fees of its members.*

*More about NICOLE on [www.nicole.org](http://www.nicole.org)*



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## 1. Introduction

### General

*“An European Policy Framework on Contaminated Land: Enabling Integrated Land Management and Promoting Sustainability”*

The joint NICOLE and COMMON FORUM Spring 2014 Contaminated Land Workshop was held at the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Berlin, Germany. The Ministry is located in the heart of Berlin near Potsdamer Platz which is a striking example of the successful regeneration of land. The area is now a lively mixture of metropolitan life in contrast with its recent Cold War history. Relics of the Berlin Wall are present inside the Ministry and also a short walk away.

The Workshop brought together a wide spectrum of regulators, service providers and industry from across Europe to participate in the review of all relevant recent European legislative and policy developments addressing contaminated soil related issues. In addition the Workshop examined the challenges of transposition and implementation by EU Member States and the practical effects on problem site management. The main policy documents discussed at this Workshop were:

- the Industrial Emissions Directive;
- the Environmental Liability Directive; and
- the Water Framework Directive and its Groundwater Daughter Directive

This Summary Report provides an overview of the Workshop and the papers presented at the Workshop are included as an annex.

### Workshop Welcome and Opening

The Workshop was opened by Jochen Falsbarth (State Secretary), Laurent Bakker (NICOLE Vice-Chair), Dominique Darmendrail (Secretariat Common Forum) and Luca Marmo (EU Commission) who welcomed the delegates to the Ministry and outlined the ‘soil’ issues facing Europe. This was exemplified by how an area of ‘soil’ the size of Berlin is being lost in Europe every year through development. This clearly has an impact through the loss of land for food production, ecosystems and many other resources that soil provides. A key consideration presented to the Workshop was the need for careful management and regeneration of brownfield and greenfield land and finding a suitable balance between the two.

We also heard how there are many directives on industrial emissions, waste, water, but a question to the delegates was where is soil addressed in existing EU legislation? This was a key theme discussed throughout the Workshop, and how legislation and policy was aimed at preventing future ‘contaminated land legacies’ and remediate historical contaminated sites. It



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was also noted that with next year being the International Year of Soils the new initiative on soil and land (announced when withdrawing the draft Soil Framework Directive in May 2014) was due to be re-examined in the new European Union Parliament.



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## 2. Workshop Contents

The Workshop comprised a series of talks focused around three subsessions, as detailed below. A breakout session and panel discussion followed these subsessions on the second day of the Workshop.

### **SUBSESSION 1: POLICY FRAMEWORK (DAY 1)**

- Inventory on soil related issues in EU legislation
- NICOLE: the Challenges for Industry
- Achieving “good groundwater status” (by 2015) – are WFD/GWDD-concepts conflicting to Contaminated Land Management approaches?
- Experiences with WFD/GWDD regarding prevent and limit principles. Addressing large scale contaminants in light of WFD/GWDD

### **SUBSESSION 2: IED, challenges to transpose, enforce and implement**

- The challenge of different countries when implementing the IED
- Baselines at operational sites
- Baseline report in accordance with IED

### **SUBSESSION 3: ELD, challenges to transpose, enforce and implement**

- The implementation of the ELD in the Netherlands: Key issues and challenges
- ELD Case Italy
- Implementation of the ELD in the UK

### **BREAKOUT SESSIONS (DAY 2)**

- Helicopter view / how to integrate sustainability in the policy framework of Contaminated Land?
- Baseline report case studies

### **PANEL DISCUSSION**

- Topics: IED – conflicts with legislation, baseline reports; ELD and compensatory remediation; soil and a framework directive.



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### 3. Subsession 1: Policy Framework

**Session Chair: Eddy Van Dyck (Ovam)**

This first subsession comprised presentations by Dominique Darmendrail (COMMON FORUM), Paul van Reit (Dow Benelux), Dietmar Mueller-Grabherr (UBA Austria) and Gerrit Kremers (Tauw). The presentations are provided in the annex to this Summary Report.

#### **Presentation 1 Inventory on Soil Related Issues in the EU – Dominique Darmendrail**

The theme of soil in EU legislation was explored by Dominique in the first presentation. An elaborate diagram was shown linking 17 EU ‘texts’ which included the legislation discussed at this Workshop - considered to be the most important for soil – and also ‘fringe’ legislation such as the Landfill Directive and REACH regulations.

The recent focus on soil in new legislation meant that there were new challenges for contaminated land risk assessment and the balancing of scarce ‘soil’ resources, population needs for food and water and future climate change effects. This very much mirrored the evolution of contaminated land policies from the ‘early days’ where there was a sole focus on soil contamination through to current thinking of risk informed decisions and sustainable land management.

Dominique outlined IED and ELD provisions for soil and posed practical questions on how to update environmental permits or deal with small increases of contaminants from the original ‘IED’ baseline; setting the scene for the remainder of the Workshop.

We heard that the view of the COMMON FORUM is that to protect soil we need to steward natural resources, meet basic societal needs for food, water, shelter, etc. and overcome societal challenges such as climate change and use of nonrenewable resources.

#### **Presentation 2 NICOLE: the Challenges for Industry – Paul van Riet**

Paul opened his presentation by saying that the intention of the European Union is to limit the impact of industry on the environment and that the most important legislation to achieve this is the IED, ELD and the WFD & GWDD.

Although there are common themes in the various acts of legislation there are conflicts too such as bringing land back to its ‘baseline condition’ following an industrial use, which conflicts with risk based land management. Contaminated land management must be seen on a larger scale (black spot in an urban development) and there are more benefits than only environmental; need for a net environmental benefit analysis (NEBA).



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Paul's observation on ELD was that most countries have limited legal cases, but there are some countries that have used the ELD extensively. Was this due to differences in interpretation, gaps in national legislation or just more active Member States?

Paul presented his 'wish list' at the end of the presentation which included *inter alia*: no EU legislation on soil - a comment that caused much debate during the Workshop; and remediation should be risk based with no 'overkill compensation' (in reference to the ELD).

### **Presentation 3: Achieving Good Groundwater Quality Status (by 2015) – are WFD/GWDD Concepts Conflicting to Contaminated Land Management approaches? Dietmar Mueller-Grabherr**

Dietmar explained the evolution of the WFD and GWDD from its starting point which focused on agricultural pollution through to incorporation of Environmental Quality Standards and the more recent concept of 'trends' in pollutants.

The question of how to achieve good status was discussed in view of the WFD's 'no deterioration' policy. Did this mean that one rogue sample in a data set was deterioration, or should this be evaluated by a more rounded assessment of all the data? Should an area based approach to groundwater contamination also be considered? However, Dietmar wondered how this would fit with existing European legislation but he was in favour of a more holistic approach.

Dietmar concluded that WFD & GWDD could be seen as an administrative burden and that there were conflicts with timeframes and hydrogeological settings and pollutant properties. However, there are some similar elements between the WFD and contaminated land management and that information exchange is vital to understanding potential problems.

### **Experiences with WFD/GWDD Regarding Prevent and Limit Principles – Gerrit Kremers**

Gerrit presented a practical example of working with the WFD & GWDD: an area oriented approach to a groundwater contamination problem. The key aspect of the 'area' approach was not to limit the focus of resources to just one site, but to use the available resources on a group of sites in a region.

There are some difficulties with this approach. For example could sufficient investigations be undertaken and how was the polluter identified? Also, there was the difficulty of allocating costs to different site owners or polluters; and the risk of 'free-riders' on others work.

This area approach has, however, been used successfully in the Netherlands and the advantages included better allocation of resources (including costs) and more room for balancing different parties' interests in the decision making process. This can be effective for



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addressing large scale groundwater pollution and in Gerrit's view the WFD and GWD offer enough room for implementing this more sustainable 'area' approach.

### Subsession 1 Discussion

A lively debate followed the morning's presentations. Perhaps not too unexpectedly this started with the SFD and there was a mix of views of whether it was needed, desirable or not required at all!

We heard from some regulators that a SFD was needed and it would complement the WFD. The reasons given were that soil and land are completely connected and the EU needs common principals for water, land and soil.

It was stated that some countries have soil legislation already, and others do not. A SFD would bring all countries into line. Another point was that a SFD would provide confidence that all European legislation is clear and that this was helpful for companies investing in the EU (i.e. a level playing field across Europe). An economic benefit of a SFD might also be that Member States could export expertise outside of the EU: it could bring research and innovation opportunities.

However, there were also voices against a SFD and some industry members spoke out about conflicts between combining two aspects of soil, agriculture and contaminated land, in one directive and how this might lower its overall effectiveness. Furthermore, it was discussed that soil was not a 'transboundary' issue and therefore not relevant under EU legislation (although others disagreed). Those with a 'no SFD' view suggested that the intentions of the SFD should be covered by national legislation and that only guidance should be issued by the EU.

Another view was that the SFD was seen as 'all expense and no benefit' and just added more and more layers of legislation and guidance that was not needed. Some felt that the SFD provided no incentives for industry, only punishments.

Following the 'yes & no' discussion the delegates were questioned on whether they had read the SFD. The problem, it was suggested, was in the details and subsidiarity. In response to earlier discussions an alternative view was also expressed that in fact soil is a cross boundary issue: e.g. sediments, oxidation/loss of organic matter crosses boundaries and therefore a SFD is relevant. Also in response to earlier comments it was argued that there was no difference in the draft SFD between agricultural and industrial pollution, and it was questioned whether a 'difference' was really needed.

An opinion was provided of what a future SFD should look like: a soil framework where existing regulations in different Member States can fit in and gives guidance for countries without any legislation. There should be no rules and no numbers ('only article numbers!'). This would create a level-playing field.

Finally it was asked: what is the alternative to a SFD? A SFD does not only cover soil contamination, it also covers other threats such as erosion and soil sealing.



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## 4. Subsession 2: IED, Challenges to Transpose, Enforce and Implement

**Session Chair: Phil Crowcroft, ERM**

The Second Subsession focused on the IED and presentations were given by Marijke Cardon(OVAM Belgium), Anja Sinke (BP) and Karin Grobber (Tauw)

### **Presentation 1: The Challenges of Different Countries when Implementing the IED - Marijke Cardon**

Marijke explained how the IED increased the importance of soil contamination when compared to previous directives. One of the main and most relevant aspects of the IED to this Workshop was the need for a baseline report for comparison when a site is closed. We heard how the IED talks of significant contamination, remediation back to baseline conditions and to follow BATNEC.

The baseline, monitoring and closure obligations of the IED were discussed and in a rather timely manner new EU guidance for baseline reporting had just been issued. This was also discussed by Marijke and the new guidance included an eight stage procedure for producing baseline reports.

A baseline report is not always necessary at installations that did not use, produce or release hazardous substances. Marijke asked what is a pollutant or hazardous substance and how do you determine this? There are currently 72 hazardous substances in Flemish Legislation for which standards have been derived and this was considered a 'trigger' for baseline reporting requirements.

Marijke also posed questions on the practicalities of how to carry out baseline reports on operating plants and what would constitute significant contamination in the context of the IED. Delegates also contributed with questions on where the cut off for the quantity of hazardous substances being used was and could existing reports, such as a validation report, be used as a baseline report. The consensus was yes, existing reports could be used, but there was no suggestion for a 'minimum' amount of hazardous material that would trigger a baseline reporting requirement.

BATNEC was noted to be consistent with sustainable remediation and BATNEC is included within the IED. But, the overwhelming principle of the IED was to return greenfield land back to greenfield land. However, regulatory views on historic contamination could mean a more lenient remediation target if a risk based and sustainable philosophy was allowed.



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### Presentation 2: Baselines at Operational Sites – Anja Sinke

Anja started her presentation by stating that BP (but also NICOLE) did not believe in ‘soil measurements’ for baseline comparisons due to the heterogeneous nature of soil and difficulty in replicating results at site closure. Although soil sampling is within the IED, Anja’s position found favour with many at the Workshop - soil was just too variable in nature to provide a useful ‘before and after’ comparison.

Current industry practice such as spill prevention and spill tracking, and routine groundwater monitoring were also cited as examples of where industry was already undertaking the requirements of the IED. In some respects, Anja suggested that industry was already doing more than the IED requirements. However, as stated at the start of the presentation, monitoring of soil produced more mixed in results.

Practical aspects and difficulties of baseline monitoring were also discussed and included access restrictions due to health and safety considerations, the risks of drilling through tank containment structures, and the cost of sampling which was estimated at 10K Euros for each sampling point. All of which would limit the available sampling positions for a baseline report.

Anja pleaded that we “please stop delineating contamination” in the context of how many sampling points were needed for a baseline report. What was the purpose of knowing the exact dimensions of an area of contamination? Instead, Anja suggested that the ideal baseline report should be monitoring of border conditions only as most plants have adequate spill response, containment, tracking and reporting systems in place to be confident that impacts from site operations would not occur or would be spotted quickly. Anja’s final thought was her wish for: “no soil sampling as part of a baseline report”!

### Presentation 3: Baseline Reports in accordance with IED – Karin Grobber

Karin discussed the Dutch guidance for baseline soil and groundwater sampling (NEN5740) in relation to IED and suggested that the guidance was appropriate for small to medium sites but excessive for larger sites. Therefore it was necessary to agree alternative sampling strategies for larger sites for both Dutch and IED requirements.

We heard that an alternative was to take a large scale view of a site that included ‘non-targeted’ soil and groundwater sampling. For example this may include not having many (or any) sampling points around a contamination source such as a tank, instead a more holistic view was considered appropriate for larger sites.

Karin presented various examples of sampling programmes for a large scale industrial site, compliant with Dutch legislation (i.e. an overly excessive sampling programme) through to plans demonstrating Karin’s alternative approach that included non-targeted ‘spatial’ sampling (a more sustainable approach with less sampling points).



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Karin concluded that the alternative approach had been accepted by regulatory authorities and had several benefits including: a good understanding of the baseline was still achieved, sampling could be undertaken in a limited time frame and costs were reduced.

A baseline must also consider the need for identifying and testing relevant hazardous substances, overcoming obstacles and the risks of sampling through impermeable barriers, and that plants were active sites (i.e. health and safety considerations).

For information a link to Dutch guidance is provided here:

<http://rwsenvironment.eu/subjects/soil/legislation-and/soil-protection>

### Subsession 2 Discussion

Following the three presentations the discussions largely focused on the practicalities of preparing Baseline reports. The debate started with the comment that the IED is preventative legislation – i.e. to prevent contamination occurring in the first place rather than providing guidance on how to react to contamination. This was thought to be good.

Some countries have their own baseline guidance, such as Finland, Italy, Spain and Germany and it was generally welcomed that the EU had just published its own guidance too. But there were challenges noted by various contributors to the debate, including:

- What methodology was there for deciding when to carry out a baseline study?
- How would a 'significant' increase be determined between the baseline and site closure? Significant is a consideration in the IED but is not defined. Maybe the question of significance can't be answered generally but in context with the general contamination of the site.
- How do you establish a baseline on a contaminated site – what is new and what is historical contamination? Could this be a driver to prefer to build on 'greenfields' instead on contaminated land (i.e. less complicated and less risky)?
- What about a site under remediation? Is the remediation evaluation report the baseline or is it the remediated site?
- It was noted that the new EU Baseline report guidance is in line with 'good practice' of the Industry, and this picked up on many points made during the preceding presentations including: industry already has spill prevention, spill tracking, emergency response plans. Groundwater monitoring is already being carried out and often at a greater frequency than required by the IED;
- More Risk based considerations are needed in groundwater monitoring and when remediating to the baseline. This was in the context that IED is considered to be in conflict with risk based and sustainable remediation guidance (i.e. return to baseline or a risk derived target?).



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- It was also felt that there was some technical and pragmatic guidance missing. For example guidance on drilling in a liquid-tight area that is used to contain contamination spills.
- Step 7 of the EU baseline guidance - targeted and non targeted sampling – was considered flexible and offered room for ‘common sense and good practices’ in preparing a baseline report.

In agreement with the speakers, many in the audience stated that they were opposed to soil sampling as a comparison indicator for baseline reports. However, this requirement is in the IED.



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## 5. Subsession 3: ELD, Challenges to Transpose, Enforce and Implement

**Session Chair: John Evans, LyondellBasell**

The third Subsession focused on the ELD and presentations were given Edward Brans (Pels Rijcken & Droogleever Fortuijn Netherlands), Marco Petitta (Sapienza University of Rome Italy with Roberto Pecoraro - Versalis – Eni Group, Mauro Congiu – Versalis Eni Group, Maurizio Guerra – ISPRA) and Alex Ibrahim (Nabarro LLP).

### **Presentation 1: The Implementation of the ELD in the Netherlands: Key Issues and Challenges – Edward Brans**

The ELD and “polluter pays” caught peoples’ attention seven years ago and Edward considered it was time for an update.

We heard Edward’s practical example of a fire that occurred at an industrial facility where the fire fighting process had spread chemicals and diesel over a wide area and into waterways. Edward highlighted the €70m clean-up and that this fell to the public purse; the facility operator had gone bankrupt.

Edward confirmed that under the ELD there was ‘unlimited liability’ and that recoverable costs under ELD were for habitats, water and land. He also highlighted that there were new tasks for the public authorities and wondered whether the authorities were sufficiently trained given the complexities of cost recovery, bankruptcy, etc.

This was highlighted by Edward’s fire fighting example: is the fire brigade liable for ‘knowingly’ spreading contamination? Was the site responsible for starting the fire? It was eventually found that the fire brigade had acted reasonably in this case and not liable.

Edward finished his presentation by suggesting that the ELD does not add much to soil pollution and that in terms of soil it only focuses on human health; there is not assessment of risks to nature such as seeds, pollen, etc.

### **Presentation 2: Integrated and Collaborative Approach among Technical Agencies, Industry and University: the Sarroch Case Study (Sadina, Italy) – Marco Petitta**

Marco provided a case study on a collaborative approach to a remediation project that involved building a conceptual site model with various stakeholders. Marco considered that the collaboration allowed a ‘solid’ conceptual site model to be created and the development of an appropriate remediation solution.



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Marco presented some detailed geological interpretation of a complicated igneous and sedimentary setting. He went on to describe how sophisticated sampling and analysis (such as isotopic and salinity analysis) had also been used to understand groundwater regimes and pollutant movement.

We heard how the detailed studies had allowed the creation of a hydraulic barrier to contain pollutants and modelling had identified losses of water from a canal and pipeline: a focus of future remedial efforts.

With reference to the ELD, Marco summarised by discussing how the collaborative approach had worked well with the regulators and that the precautions taken had avoided an environmental problem occurring. Marco's final thoughts were that the project may have had a different, negative outcome if a collaborative approach had not been taken.

### Implementation of the Environmental Liability Directive in the UK – Alex Ibrahim

Alex started her presentation by outlining the general principles of the ELD including its aim to prevent and remedy environmental damage. She highlighted that the ELD did not have retrospective effect such that it did not apply to damage caused prior to April 2007, Alex then explained how the ELD had been implemented in the UK. We heard that whilst there was no criminal liability for causing environmental damage in the UK, there were criminal sanctions for breaches of the implementing legislation i.e. failure to comply with remediation notices.

Alex explained that the implementation and integration of the ELD in the UK had been difficult as the implementing regulations supplemented rather than replaced existing environmental legislation. As such this had made enforcement of the legislation complex. Alex noted that a regulator was more likely to use existing environmental legislation to enforce the remediation of environmental damage with which they were more familiar than use the ELD. She suggested that this may be a reason for the relatively few cases under the ELD in the UK.

Alex explained the difficulties with the ELD, including: how does an operator know environmental damage has occurred? How do you define baseline conditions for remediation? She also noted that there is a lack of track record in the UK for regulators to assess cases on and determine appropriate remediation measures. In response to these difficulties the following ways of managing the ELD were suggested:

- Find out what the 'environmental' baseline is at the site for future reference and note any environmentally sensitive receptors;
- Assess current pollution risks; undertake audits to reduce risks of an environmental incident;



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- Understand reporting duties and train employees; and
- Take out sufficient and appropriate insurance cover (recommended in the UK).

With regards to environmental insurance Alex said that there had been a lack of take up in the UK for environmental impairment liability insurance to specifically cover ELD liabilities. She noted that some members of the insurance market had commented and queried whether insurance was the correct route to take in respect of a Directive aimed at prevention rather than reaction.

### Subsession 3 – Discussion

The discussion picked up on the ELD speakers' opinions that the ELD has 'patchy' use in Member States, and tends to be used more where a Member State does not have complimentary legislation. The lack of a track record and experience with the ELD was another factor in its use.

An animated discussion point was how far should an ELD environmental baseline report go? An example was given of pollution in one Member State migrating and affecting the environment in another Member State. Clearly it is not practical to survey many kilometres of rivers, or even wide areas of land outside a facility. A practical and pragmatic solution would need to be found.

Some members of the audience also queried the insurance and financial implications and how a financial resource could be allocated for an accident that had not yet occurred. This was not thought to be good accounting.

In relation to soil damage the fact that the ELD only referenced human health as an indicator of environmental damage was discussed. In terms of soil there was no reference to natural soil resources, diffuse contamination or the wealth of other benefits that soil provides. This was considered a limitation.

A comment on financing emergency response costs was made and how this would be accounted for if the environmental incident was later decided not to come under the ELD. This was discussed in respect to the ELD requiring an immediate response and costs could be incurred that were not necessary. The REMEDE project was also discussed and that this provided information on interim losses (compensatory measures).

Another scenario that was discussed included environmental damage to a natural resource and this being determined as an impact on the function of the resource. What if the natural resource was a big river system? Pollution may occur but function of the whole system might not be affected. Would this still be a case under ELD?



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## 6. Sub-Workshops

Two separate sub-workshops and a panel discussion were held on the second day of the 2014 Spring Workshop. The aims of the separate sub-workshops were to further explore the possible conflicts within various EU legislation and guidance and whether sustainability is compatible with recent EU Directives.

The sub-workshops built on the questions and debates that followed the speakers of the previous day and allowed participants to see how EU legislation works in practice.

A panel discussion followed the sub-workshops and we heard views from industry, legal, regulatory and service providers. The discussion provided a thoughtful insight into the various subjects that had been discussed throughout the entire Workshop.

### Sub-Workshop 1: Sustainable Remediation

A presentation by Shell and URS formed the focus of the sustainable remediation sub-workshop. The presentation was of a study of where sustainable remediation 'text' is present in EU legislation and guidance. The sub-workshop split into groups to discuss various aspects of this subject. The outcome was presented to the entire Workshop.

It was concluded that sustainability is still not well understood and awareness needs to be raised. There are different national approaches and sustainability is integrated into legal and technical guidance throughout Member States. But there was still variability in each Member State.

There is also a difference in how sustainability is applied and it does vary on the size of the site and contamination problem. Generally, it was felt that sustainability was more likely to be used on larger sites and more complicated contamination problems.

It was considered that there can be barriers to sustainability on many sites and in different Member States. A particular example of having to reach 'trigger' levels fixed by a regulator was mentioned (i.e. the trigger level not being based on a sustainable target). Other barriers included the time required to implement sustainable remediation measures and the lack of financial incentives (for example a lack of landfill tax in some Member States).

A warning was also given around liability for contaminated land in the long term (i.e. would sustainable remediation last the test of time or changing science or regulations). Property value should be linked to 'quality – fit for use' and not to the terms of polluted or contaminated. It was felt that more case studies were needed to substantiate the use of sustainable remediation. A common direction and view was needed as without a 'push' it was considered that in some Member States it would be difficult to implement sustainable remediation.

An interesting difference of opinions between some industry and regulatory members was expressed: a perception that sustainable remediation was more expensive was voiced by some



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industry members, whereas some regulatory members thought the opposite (i.e. sustainable remediation was less expensive than 'traditional' remediation). It was not clear whether this was a barrier to implementing sustainable remediation.

The sustainable remediation workshop was brought to a close with the following sentiment: there is a societal perception around sustainable remediation. One person's sustainable solution is another person's terrible solution. For a truly sustainable remediation solution it is vital to start talking early with all stakeholders to meet everyone's concerns.

### Sub-Workshop 2 – Baseline Report Case Study

The second sub-workshop focussed on the practical issues of an IED baseline report. To facilitate the workshop a case study was provided of a chemical facility in Germany. The sub-workshop was split into three groups to discuss the baseline report, monitoring during operation, and site closure.

The group discussing the baseline report was clear that the baseline should only concentrate on the contaminants associated with the facility and not historic contamination. This was specified within the IED. The Group would also exclude from its baseline some substances due to low volumes of use (including oil), some solid substances and also contaminants that would have a low environmental 'half life'. Sampling would also take into account where a contaminant would likely be found in the environment and what media it may be in. An example was given of an acid which would more likely be in groundwater rather than remain in the soil (i.e. sample only groundwater). It was also suggested that there should be no focus on contaminant degradation products.

The number and position of sampling points was also discussed with a general view of sampling locations being up and down groundwater gradient (i.e. contaminants coming onto and off site). It was noted that this would not meet some country's guidance such as the Netherlands (i.e. IED sampling was less onerous than the Dutch guidance). Optimising well locations and uses was considered to be good (e.g. using wells from a pre-existing investigation).

The second team of this sub-workshop was tasked at looking at monitoring. As with previous discussions there was a clear message that there should be "no soil monitoring". But, it was understood that this is an IED requirement. During the monitoring it was felt that if trigger values were not being exceeded then the chemical analysis could be rationalised and similar contaminants could be grouped together (i.e. 'indicator' chemical analysis rather than analysis of all possible contaminants). Equally, a change in the monitoring strategy could also be required if there was a pollution event in the future.

It was felt that the more information available the better and a good understanding of 'background noise' was desirable. Risk assessment could also be carried out to determine the significance of daughter contaminants and whether these should also be included in the monitoring.



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The third team focussed on site closure and unanimously agreed that there is a conflict between IED and risk based remediation requirements. Problems with interpreting differences in soil chemical analysis over time was again highlighted, and also the need to distinguish migration of similar contamination from an off-site source migrating onto the site.

A few practical issues were also highlighted. This included how to assess a substance that is not currently defined as being hazardous, but in the future is re-classified as hazardous. Should a regulator and site operator agree a strict baseline report, or be flexible to accommodate changes in legislation, science or policy that may alter a substance's classification in the future?

It was also discussed that a baseline report should also be able to determine what acceptable deviations could occur within, say a 20 year period rather than at the time of site closure (i.e. no surprises as site closure). This led to the unanswerable question of what would be an acceptable rise in a contaminant concentration.

Another thought was what if the owner 'unintentionally' cleans up historic contamination as part of the IED remediation – should the owner receive a credit for this environmental benefit that would not necessarily have occurred?



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## 7. Panel Discussion

### The Panel

The Panel comprised the following people:

- Representing the Common Forum: Andreas Bieber (Ministry of Environment, Nature protection, Construction and Reactor security, Germany);
- Representing the NICOLE ISG: Lucy Wiltshire (Honeywell, UK);
- Representing the NICOLE SPG (technical): Pernille Nielsen (Mediterra, Spain);
- Representing the NICOLE SPG (legal): Alex Ibrahim (Senior Associate at Nabarro, UK).

### Topics for Discussion

The Panel Discussion was structured around the following topics:

- General: we have seen that clauses in different EU Directives are (or in any case seem to be) in conflict with each other, e.g. on when to take remedial action.
- IED: The EU Guidance for baseline reports is a useful document, with which we do not have any issues?
- ELD: compensatory remediation is in fact overkill?
- Should the EC proceed with developing a regulatory structure for soil? The scope of any future EU regulatory structure dedicated to soil should be broadened to include land.

### Summary of Panel Discussion

The first subject discussed by the panel was conflicting criteria.

Would the IED limit innovation and trials of state of the art technology? Was there a difference in groundwater protection levels and the need for remediation of contaminated land? Are there differences in guidelines?

With conflicting legislation it was felt that regulators are under resourced to understand and apply legislation and therefore there was no consistency in how regulators are applying the legislation. The regulator has to be challenged when it is wrong.

With innovation there was a new technologies defence under ELD, along with state of the art and permit defences. However, it was difficult to say how regulators would react but it would be worth attempting a challenge to those defences.



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The next subject for discussion by the Panel was IED Baseline Reporting.

It was noted that the new EU guidelines were not legally binding. However, this was put into context by considering what a court would do and it was decided that they would look to the 'official' guidelines in the absence of any other guidance. The lack of guidance on what 'significant' meant was a drawback and it would be beneficial for an EU wide discussion on what significant meant.

The Panel also considered that there was a degree of pragmatism needed in baseline reports. For example sensible practical measures should be taken to avoid creating pollutant pathways such as not drilling in liquid tight areas – a theme carried over from the previous day's discussion. A site by site discussion was needed for each IED baseline report and as the new EU guidance was not legally binding, from a legal perspective there was always an opportunity for a legal challenge on what should be in a baseline report.

Some welcomed the new EU guidance as it did provide some definition to what was needed.

The third topic for discussion was the balance between legislation and risk assessment.

In opening, the discussion for this topic the view that if risk assessment is not being applied then there is no opportunity to define what significant pollution was. For example, was a change from 50ppm to 51ppm significant, or was 50ppm to 100ppm significant? However, there is language in the ELD that helps, for example 'technically feasible'. But, industry needs more guidance and it is a 'struggle' to return a site back to an arbitrary line in the sand (i.e. the baseline condition).

This prompted a question: "would too much legislation drive development from brownfield to greenfield land as it would prevent having to assess and remediate historical pollution". This was countered that a baseline report should only address the contamination that could occur from the operation being undertaken.

It was also felt that discussion was needed on how you compare discrete sampling points after many years apart? And, if a small minority of sampling points 'failed' the baseline at closure should this prejudice the majority of sampling points that 'passed' the baseline at closure.

Another concern was raised that if the baseline report showed a lot of contamination which had nothing to do with the proposed operation it was unlikely that the regulator would find this acceptable. Therefore, it was considered that a baseline report could unintentionally trigger other legislation and clean-up requirements.

A common thread throughout the Workshop was the use of soil testing in the baseline report and this was again discussed with the need for the analysis and interpretation to be right, rather than just a straight unconsidered comparison of 'single' before and after values. Statistics were mentioned along with the need to base assessments on 'lines of evidence' such as risk assessment.



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The Panel Discussion came to a close with the ELD and a light hearted debated on the definition of 'pollution' and 'contamination'.

This discussion point opened with a comment on whether 'compensatory remediation' was overkill. In answer it was considered that it depended on the individual site, but it was difficult to know what the response was in practice due to the lack of a track record.

An example was given of a fish kill. The primary remediation was to re-stock the river and compensatory remediation was to re-stock fish in the local vicinity. Is this reasonable: yes, if it benefits users whilst the river is 'out of action'. No, if it is just a 'nice to have'. However, it is a fair concept to compensate for losses.

An industry member asked what was the purpose of compensatory remediation (i.e. is it fair) and how do you measure the loss of value. How are compensatory measures for interim losses 'normalised' and there needs to be progress on this?.

The Workshop ended on a lively and light hearted debate on what contamination and pollution meant. Was contamination the input of even the smallest amount of a substance into the environment, and was pollution the result of harm having occurred? Perhaps the last word should be given to the legal view that the use of contamination and pollution in documents should be avoided!



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