Having the heretical debate

CLB talks to John Waters, ERM's commercial director and head of contaminated site management for EMEA, about making remediation more sustainable – even if it means rethinking risk assessment

As the contaminated land sector matures – along with the technologies that make remediation possible – it is also beginning to evolve, with sustainability and issues such as climate change impacts increasingly exercising the experts.

The journey towards a truly sustainable remediation industry is just beginning in the UK, where dig and dump is finally becoming uneconomic due to the ever-rising landfill tax (from which contaminated soils are no longer exempt).

This means in situ treatment techniques are coming to the fore, offering opportunities to green up equipment and minimise emissions from trucks as movement of materials is reduced.

However, for John Waters, ERM's commercial director and head of contaminated site management for Europe, the Middle East and Africa, it's going to take a lot more than wind turbines on groundwater pumps to make land remediation truly sustainable – including sparking a debate on our whole approach to risk assessment, the "heretical discussion" about moving away from a focus purely on the contamination in the ground, towards a more holistic appraisal of a site's condition and the best way to bring it back into beneficial use.

Greening remediation

Waters says there are two main schools of thought on sustainable remediation. The Americans, technology-focused as always, are very keen on greening remediation – using biofuels when hauling truckloads of soil, or installing solar or wind power to drive in situ treatment kit.

But for Waters the real challenge is not green end-of-pipe solutions, but making sustainability a key part of decision-making from the first day you step on site.

He says: "From the moment you identify a problem you're looking at sustainability as one of the decision-making tools in deciding on its severity, assessing the risks to human health and the environment, through to remedy selection, installation and operation.

"This more holistic approach is the way SuRF in the UK is looking at it through their framework for assessing the sustainability of soil and groundwater remediation, and it's also the way the Network for Contaminated Land in Europe network [Waters chairs NICOLE's soil working group] is moving.

"In fact NICOLE is probably pushing sustainability to the boundaries of the current debate about problem identification and remedy selection."

Relative risks

Waters uses an example from the USA to illustrate just how much the picture can change once the three pillars of sustainability – environmental, social and economic – become central to the approach to a contaminated site, rather than exactly how many milligrams per cubic metre of this or that heavy metal infests the soil.

He says: "For a large polychlorinated biphenyls remediation project in the States there were two remediation options – that of installing a permeable cover, or a large-scale dig and haul operation, which would have taken 114 months to execute.

"The scale of truck movements that would have been required was such that statistically there was a one in 100 chance there would be a fatality associated with the trucks themselves.

"Now the risk to human health established using risk assessment that the project was being enacted to manage was a one in one million chance over a lifetime of causing cancer.

"Human health risk assessment is inherently conservative. However, on the one hand you had a one in one million chance of cancer, and on the other a one in 100 chance of a person being killed over the ten-year period.

"When you get to those stark comparisons you turn around and you ask should we reassess the remedy – would it be better to select an in situ technology that wouldn't reduce the contamination to the absolute levels dig and haul would, but would take away that risk of killing somebody while carrying out remediation?"

Singular focus on contamination

The UK's contaminated land regime is a flawed beast, as anyone in the industry would admit, including those who administer it. However, it does do what it says on the tin, addressing contamination of soils and requiring that they are cleaned up to safe levels.

Waters says: "At the moment the regulations require a disproportionate, in some ways even singular, focus on the risk posed by the contamination in the ground, rather than the holistic risks created by some of the other issues such as digging huge holes in the ground, say adjacent to a residential area.

"Yes those issues are part of the job, and yes we can and should mitigate against them, but we know from the occasional high profile case that they don't always get managed as well as they should do.

"In fact, sometimes we create problems that the solution was intended to mitigate, but in fact increases the risk of harm."

And this is where we hit dangerous territory. Waters says: "It's often very easy to introduce a solution that is much better in terms of impacts on the local community. Where it gets difficult is when there is a conflict between what the risk assessment says you need to do and what you can practically do with an in situ technology.

> **"Policy-makers will have to face up to making some hard choices and perhaps accepting slightly lower levels of perceived protection to the public"**

"And at that point you either have to say the risk assessment – however conservative – needs to dominate and we may have to do something that introduces other risks, even if those other risks create issues that are inherently unsustainable when you look at sustainability holistically, across the three pillars of environment, social and economic. Or you can have the heretical conversation and challenge whether the risk assessment methodology is overly conservative."

Tough economic times

Disagreement over how we in the UK conduct risk assessment has grumbled on interminably, among organisations, between regulators such as local authorities and consultancies and their developer clients, and in pubs throughout the land wherever men with beards, sandals and a taste for real ale congregate.

But the arguments have always been about what level we set as an unacceptable risk to human health – not whether the level of contamination present should be the factor of most importance in the first place.

Waters says: "Many industrial companies do not want to stick their head above the

parapet and ask whether we should have that debate, but in terms of both sustainability and the current context of tough economic times where we need to focus effort on the best bang for our buck, now may be the time.

"Policy-makers will have to face up to making some hard choices and perhaps accepting slightly lower levels of perceived protection to the public.

"However, they can then make a judgement on whether by for example using an in situ technology instead of dig and dump, they have reduced the overall level of exposure because we're not creating clouds of dust, or running as many trucks down residential roads.

"Maybe the sustainability debate and the tough economic climate will bring the planets into alignment and we will be able to have some form of meaningful debate about this that doesn't collapse into hysteria – the hysteria being 'oh lord we couldn't possibly relax the quantitative risk assessment criteria because that's putting our children at risk'.

"Instead it should be 'there are a whole range of risks associated with a contaminated land site that we should look at and then make sure we make a balanced assessment'."

Rethinking risk assessment

Waters believes rethinking the parameters of risk assessment may not lead to as momentous a change as some might think. He says: "For sites that are significantly impacted it may modify the volume that needs to be treated, but it's not going to eliminate it.

"So if you've got a site that would be declared as contaminated land under Part 2A it isn't actually going to make a whole heap of difference.

"The difference will be seen when developments are being considered and the scale of remediation being required is proving disproportionate on a marginal site. Then you can create a scenario where you're likely to get a better bang for your remediation dollar and have more chance of bringing sites back into beneficial reuse, while still dealing with those risks that absolutely need to be dealt with.

"With the situation as it is now, there are many sites that may never be brought back into beneficial reuse because it's cheaper and safer for a company's reputation to manage them by leaving them lying fallow, or just putting a fence around it, padlocking it and throwing away the key."

A holistic approach

Waters believes now is the time the contaminated land sector should begin to look seriously at risk assessment and remediation in a more holistic way.

He says: "We have to create an environment where we no longer find that one – albeit important – focus on the contamination itself outweighing every other element."

ERM is beginning this process internally, as part of a company-wide drive to embed sustainability in all business activities. The firm is also developing a tool (to be launched in the next six to nine months) that looks at contaminated land management over a broader lifecycle, which will sit alongside those developed elsewhere that examine single issues such as carbon footprinting of remediation projects.

Waters says: "We're engaging with local authorities and the Environment Agency on this issue to explore with them the ways in which sustainability can become part of the decision-making tools we can legitimately use as we develop remedial action plans.

"We're finding a lot of receptiveness for this debate, and engagement with the regulators provides more opportunities to understand the best way to articulate the issues, so these organisation can be part of the process rather than thinking it's a way we're trying to hoodwink them."

With surprising results…

Applying the principles of sustainability to the planning of remediation projects can also throw up interesting – and sometimes surprising – results.

For example, most would consider in situ technologies such as thermal desorption and soil washing inherently unsustainable due to their energy intensive nature and therefore large carbon footprint.

However, Waters says: "There may be circumstances where you would select thermal as the sustainable option as opposed to offsite landfill disposal – if they are the only two options available, thermal may well prove a better solution because you're not carting the material off site.

"So one of the key things is that can you do those assessments of the carbon impact, or water usage is an important one for some of these technologies, particularly for soil washing. Looking at the full lifecycle of these issues is very important and may lead you to a decision that wouldn't be the one you would think."

ERM commercial director John Waters

The escalating landfill tax is helping to drive the use of alternative soil treatment techniques, but there are other issues around landfilling hazardous material.

Waters says: "We've got a lot of clients now, particularly industrial clients, who don't want to pay for landfill even if it's the cheapest option: they're concerned about long-term liabilities, concerned about the reopening of landfill sites.

"If the landfill needs to be remediated or causes contamination issues on adjacent land or in groundwater or aquifers they don't want to be in a situation where new liabilities come about."

While some might fear that considering so many wider issues in planning management of contaminated sites risks diluting the importance of dealing with contamination itself in the eyes of government ministers or local authority chief executives, the debate that dare not speak its name is coming whether we like it or not, particularly as the development sector remains in tatters and the best of the brownfield sites have long been built on.

Like it or not, it's time to talk.