



The MNA concept, a view from industry

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Great

Butyou have to prove it

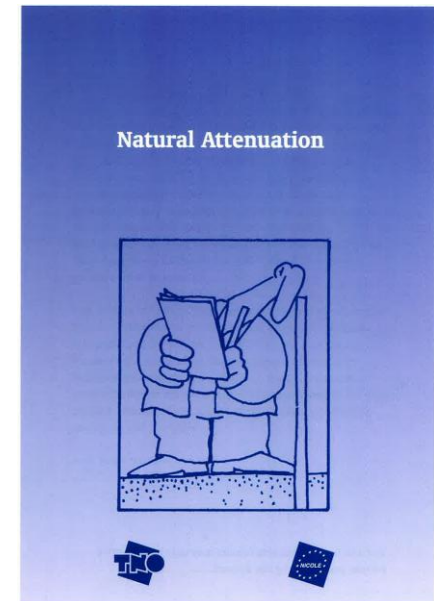
Oh, what does it imply

...nature is rarely in a hurry

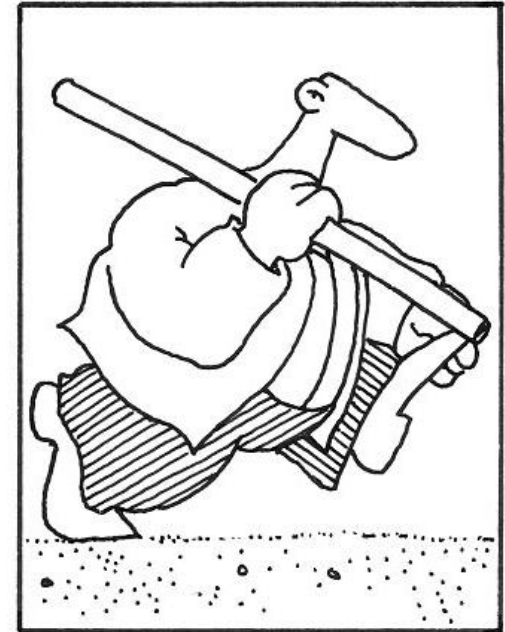
Annoying!

...it is not demonstrated for all contaminations

...is it really applied?



- Protocols exitsgood news it helps
- But
 - the demonstration period takes time, typically 2-3 years, the implementation will last for many more years
 - it is practically impossible to predict the time needed to reach the remedial objectives
 - will attenuation processes maintain themselves over long period of time?
 - sustainability issue
 - how to manage MNA in the case of a transaction?
 - if accepted by the authorities, it should be treated as any other long term managing option



- NA should be systematically consider on all project
 - always characterise a site with in mind the site conceptual model
 - check for indices of NA (usefull also for most remedial technology, certainly for ENA)

- NA need not to be considered as a stand alone solution only

- Investment in demonstrating NA should be proportional to the complexity of the case (no rigid implementation of protocol)

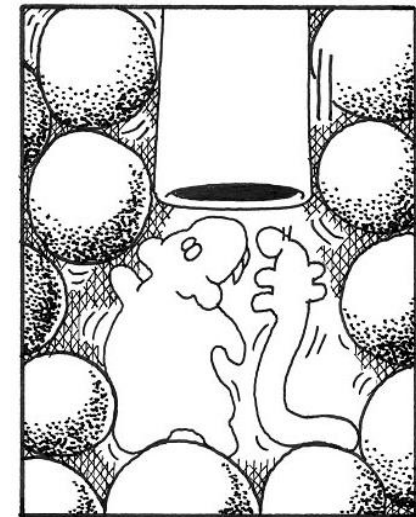
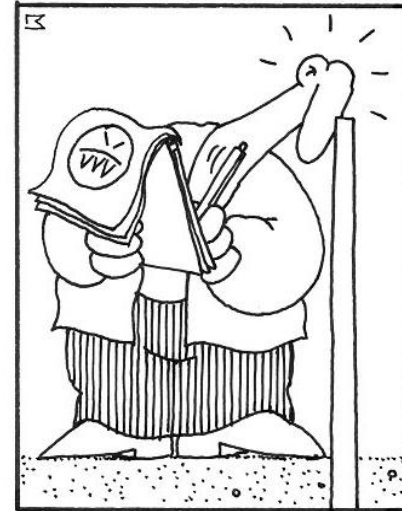




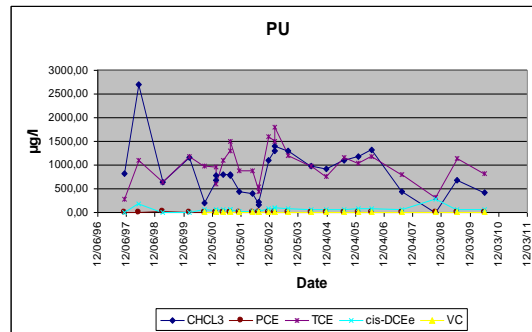
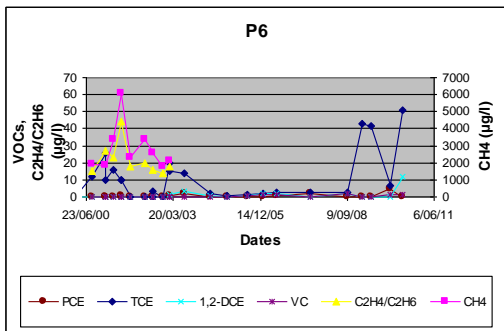
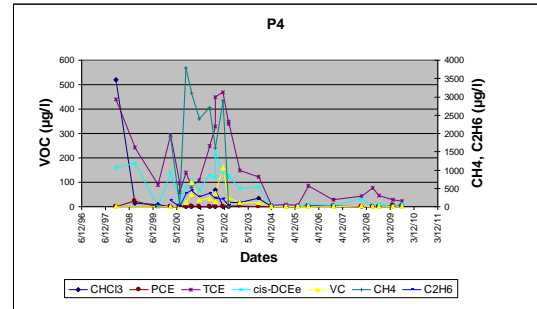
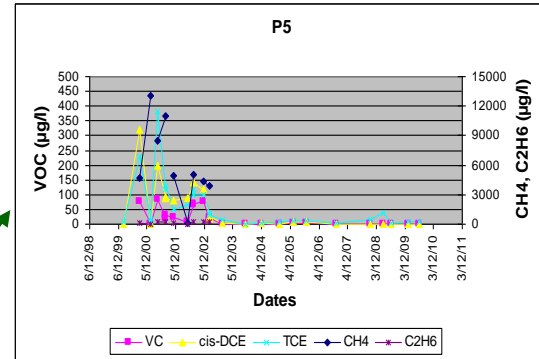
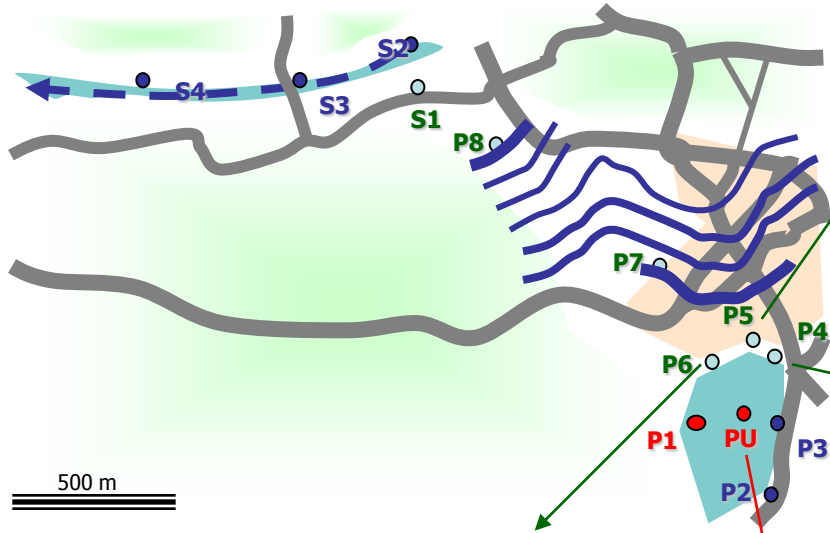
- Is nature always that slow?



- Nature can be faster than the administrative track of managing a contaminated site
 - easily biodegradable, small amount

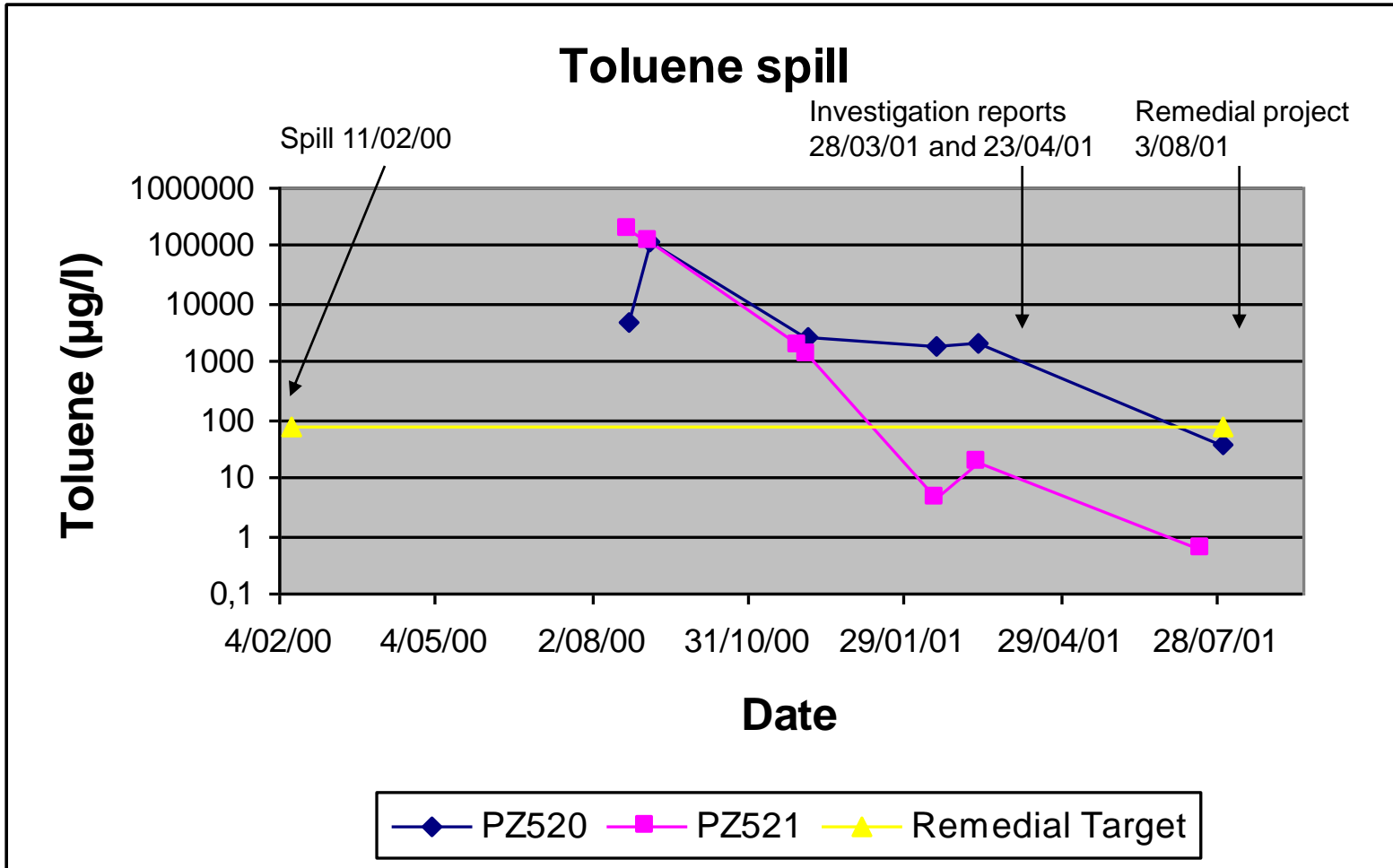


Nature is not in a hurry



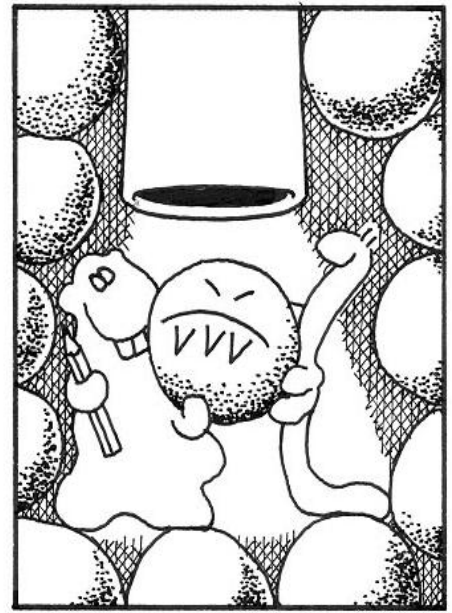


Nature can go fast...everything is relative



Is nature able to attenuate the risk of any contamination?

- Metals... can we make stable natural analogs?
 - CrVI → CrIII
 - metal sulfides
- Refractory/new compounds?
- Complex mixture of contaminant and/or other contaminants than BTEX, HC, PCE, TCE?



- Burden
 - Cost
 - Risk of failure
 - Time to reach the remedial objectives
 - After care
 - Other



- Benefits
 - Risk reduction
 - Contaminant removal
 - Stable end situation
 - Liabilities reductions

- Stepwise approach
 - Agree upon choice of criteria and remedial alternatives
 - Detail remedial alternatives
 - Detail criteria and make comparison table
 - Motivate choice of preferential alternative



There has been / is a large interest in NA

- Lots of reseach/demonstration initiative
 - UK, D, F, NI, B, ...
 - Nicole MNA
 - 1999 review of protocole guideline, communication booklet
<http://www.nicole.org/news/downloads/RAPPORT%2099-313%20COMPLEET+KAFT.PDF>
 - Booklet
<http://www.nicole.org/documents/DocumentList.aspx?l=2&w=n>
 - 2005 demonstration project,
<http://www.nicole.org/documents/DocumentList.aspx?w=mna>
 - 2007 Sustainability of NA of BTEX
<http://www.nicole.org/news/downloads/FINAL%20S-NA%20REPORT%20NICOLE%20200707.PDF>
- Protocols/guidelines
 - existing (UK, NI, Flanders...)



How is NA perceived?



- NA concept is generally well accepted
 - demonstration projects NICOLE, Macao (F), ATTeNA (F), KORA (D)...
 - existing protocols/guidelines
- But renewed interest from the authorities in source control



Is NA widely applied?



- Number of cases accepted by the authority and labelled MNA seems limited.
- Why?
 - administrations unfavourable?
 - burdern of proof to heavy?
 - actual attenuation process
 - long term sustainability of the process
 - time scale to reach the remedial objectives does not fit with administrative / industrial management time frame?
 - uncertainties over long period of time to be managed in sale & acquisition process !
 - the do nothing image?
- « Hidden » NA case are probably as numerous if not more, i.e. the site under « monitoring »



Conclusions : what we observe



- Concept generally well accepted by industry, authorities, scientists
- Implementation on the market slower than could have been anticipated, reasons?
 - local legislative context
 - long term uncertainties (authorities, problem owner)
 - rigid implementation of protocol (cost)



Conclusions : wishes



- The approach should fit into a risk-based management of contaminated sites
- NA can be considered in any project
 - check for indices of NA (usefull also for most remedial technology, certainly for ENA)
- NA need not to be considered as a stand alone solution only
- Protocols
 - should not be rigidly applied. Not all MNA site have to be a 3 to 5 years reseach project.
 - let's be practical
 - investment in demonstrating NA should be proportional to the complexity of the case (no rigid implementation of protocol)

Thank you for your attention!

