Redevelopment of a 170 year old Chemical Production site
History and current re-development status of a 170 year old Chemical Production site in Germany

– History
– Hydrogeology
– Contamination situation
– Hydraulic remediation
– Future perspective
History

1842 - 2012

Public
Dr. Michael Schneider
Corporate ESHA
Environment
05.10.2012
History Offenbach site

– 1842  First coal tar distillation
– 1851  Production of 2,4,6-Trinitrophenol (Picric acid)
– 1860  Production start of Anilin und Fuchsin
– 1911/12  Invention of Naphtol AS dyes
– 1925  Integration in „IG Farbenindustrie AG“
– 1943/44  Allied bombing results in 70 % destruction
– 1946  Start of reconstruction (Naphtolchemie Offenbach)
– 1953  Integration in „Farbwerke Hoechst AG“
– 1958/62  Commissioning of DMT- and Polyester resin plants
– 1992  Plants for Remazol and Polyestercondensation
– 1997  Sale to Clariant
– 2001  Sale to AllessaChemie
– 2009  Production stop DMT / Polyester resins
– 2010  Production stop last plant AllessaChemie
Current situation Offenbach site

- **2010**  Start dismantling for Polyester plants
- **2010**  Start of wood pellet production, followed by further activities of local power supplier
- **2011**  Start dismantling activities for chemical plants
- **2012**  Dismantling Polyester plants completed
- **2012** Several activities, e.g.
  - Local decontamination of hot spots
  - Investigation of unsaturated zone
  - Inventory of remaining pollutants
  - Final remediation concept
- **Mid 2014**  Demolition activities to be finished
  - Local hydraulic remediation (A-carbon)
- **Since 2012**  Investor negotiations for sale
1896 / 1899
1925 / 1928
1962 / 1963
Aerial photograph 1992
Aerial photograph 2009
2010

Photographs August 2011
Remaining buildings
Snapshot mid 2012
Underlying Clay (Rupelton)
Groundwater level
1990
Groundwater level
2010
Contamination
Area classification based on historical investigation
COD in groundwater
1992
Toluene / Xylene concentrations

Monitoring well (hotspot)
Toluene / Xylene concentrations

Monitoring well (outside of hotspot)
Chlorobenzene 2011
Backfilled areas

Chlorobenzene [µg/l]
- < 10
- 10 - 100
- 100 - 1000
- 1000 - 4500

backfilled areas
- aerial photography evaluation 1945
- aerial photography evaluation 1952
- aerial photography evaluation 1960
Hydraulic remediation

LOCAL DECONTAMINATION BY FORCED FLUSHING
Forced flushing Summer 2012

- Benzene
- Chlorobenzene
- Toluene
First results

• By continuous pump and treat over 15 years more than 330 kg of the main contaminants have been removed
• The local hotspot remediation by flushing over 3 months resulted in
  • Abstraction of ~ the annual amount of groundwater
    - Reduction of groundwater thickness in abstraction areas from 3 to <1.5 m
  • Removal of ~200 kg of the main contaminants (10 times efficiency increase)
  • Mobilization and removal of more than 100 kg of other contaminants
  - Significant reduction of contamination hotspots in saturated zone
    - But remaining contamination in unsaturated zone not yet known
  - Final evaluation of hotspot remediation to be completed
  - Contaminant inventory in unsaturated zone started (final goal: MNA)
Planned exploration of unsaturated zone (suspect areas)
what is precious to you?
First redevelopment ideas (City of Offenbach)
Alternative redevelopment concept (ARCADIS)
Thank you!

SEE YOU AGAIN –

PERHAPS AS AN INVESTOR IN OFFENBACH?! ☺