Groupe d'Expertise Pluraliste

Post Uranium Mining:
The activities of the Groupe d'Expertise Pluraliste in Limousin (France)

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Yves Marignac
GEP Coordinator

Didier Gay
Scientific Secretary

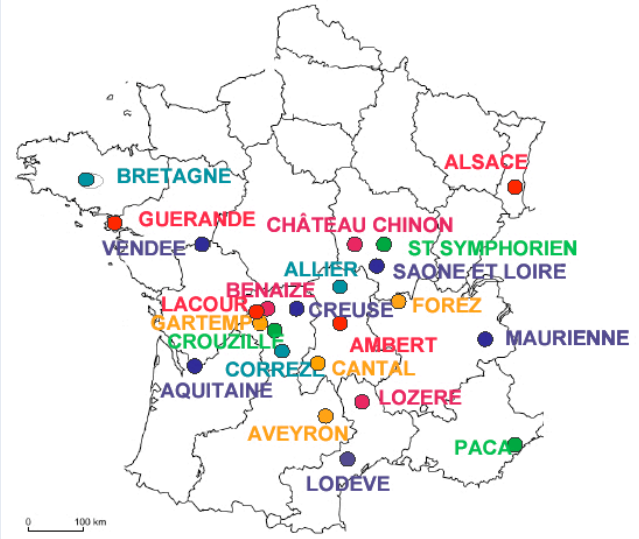
SUMMARY

- **Background**
  - Uranium mining, post-mining and concerns
- **Setting Up**
  - Mission, organisation and means of GEP
- **Addressing Issues**
  - Priorities and current work of GEP
- **Achievements / Prospects**
  - "Balance sheet" and follow-up

BACKGROUND (NATIONAL)

Uranium Mining in France

- 50 years of operation
  - Started in 1948, ended in 2001
  - More than 200 sites in 23 mining zones
  - 76 000 tons of uranium produced
  - 50 million tons of mill tailings on 17 storage sites
  - From scattered owners to a major operator Cogema (now AREVA)



Uranium mining zones in France

BACKGROUND (NATIONAL)

Post-Mining Activities

- Scattered and complex legacy
  - Legacy of more than 200 sites, 52 million tons of mill tailings, > 200 million tons of waste rocks
- Closure work completed at most sites
  - now monitoring and control plus some water treatment
  - issue of (long term) sustainability of the systems implemented

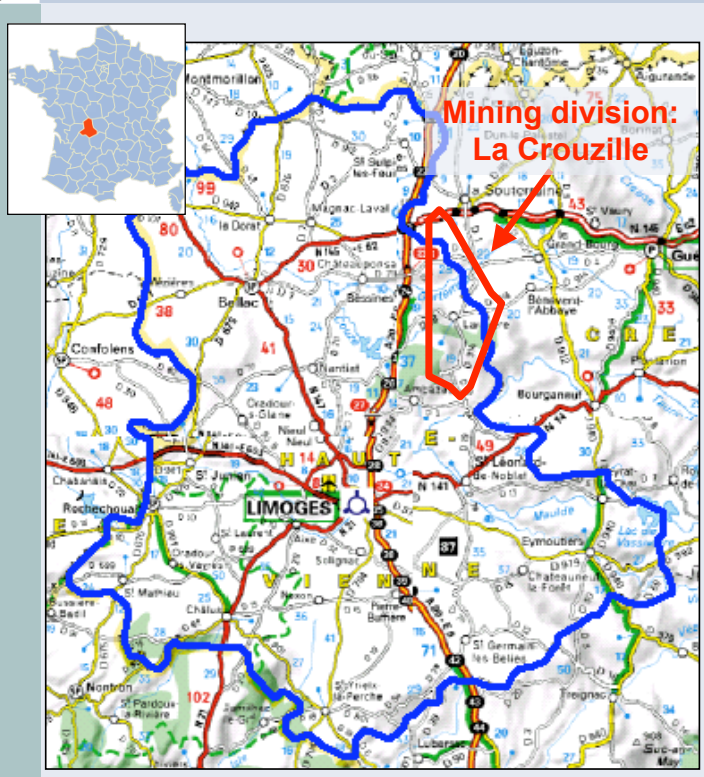
Mill tailings storage site after rehabilitation (MCO 68 - 105, Bellezane)

BACKGROUND (NATIONAL)

Local and National Concerns

- Controversies on rehabilitation / local pollution particularly in Limousin
  - actions of environmental NGOS
  - independent counter-assessment of risks
  - media coverage
  - juridical trials opposing NGOs and AREVA
- Update of national policy on long term management of radioactive residues and contaminated sites
  - 2006 Act on radioactive waste management
  - Provisional programme for long term management of mill tailing disposals to be prepared by the end of 2008

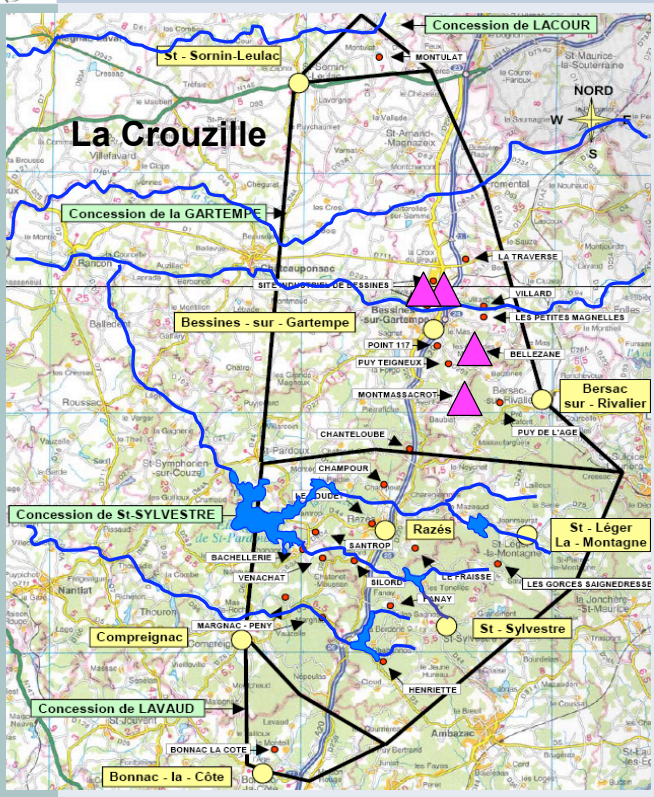
BACKGROUND (LIMOUSIN)



Uranium in Limousin

- The core of uranium mining in France
  - From the first mine to the last closure
  - 40% of French production
  - 30 mining sites, 2 milling sites, 5 tailings disposal sites
  - Division La Crouzille: 24 mining sites, 23 324 tons uranium from 12,8 million tons

BACKGROUND (LIMOUSIN)



Local Context / Crouzille

- 24 mining sites
(58 Mt waste rocks; 100 ppm)
- 4 mill tailings storage sites
(20 Mt ; mean Ra226 conc. 30 Bq/g)
- 7 watersheds
- enhanced concentration found in some sediments (up to ~10 Bq/g)
- water collection network (up to ~1Bq/l en Ra226 and 1mg/l en U), water treatment where necessary
- calculated added effective dose up to the order of 1 mSv for some local groups

SETTING UP

Part of a Global Effort

- End of 1990s: elaboration of guidelines (mill tailing storages)
  - Recommendations of a working group commissioned by the Ministry of environment with IRSN, AREVA
- From 2004: new effort by local authorities
  - 10-year environmental assessment on Crouzille by Areva
  - Technical review of this assessment (mainly by IRSN)
- From the end of 2005: commissionning of a national pluralistic expertise group (**GEP**) on Limousin uranium mines
  - End 2005, joint letter by 3 Ministers: Environment, Industry, Health
  - End 2007, additionnal letter by Ministries of Environment and Industry and Nuclear Safety Authority (ASN)
- Coordination / 2006 Law on radioactive waste management

SETTING UP

Comprehensive Commitment (mid 2006-end 2009)

- Contribute to the critical analysis
  - Discuss AREVA's 10-year environmental assessment and the monitoring plan for concerned sites
  - Participate in the discussion of orientations of IRSN's technical review
- Help choices with management and monitoring options:
  - Recommendations for the reduction of impacts from mining sites in Haute-Vienne / *in Limousin*
  - Medium to long term perspectives with focus on:
    - comparison (other industries, foreign remediation experience)
    - *technologies for water treatment, discharge limits, passive protection on mill tailings disposal sites*
    - *local remediation work already implemented*
    - *methodology for extending recommendations to all French sites*
- Contribute to the information of local stakeholders and the public

Note: first commission letter (end 2005) / *second commission letter (end 2007)*

SETTING UP

Pluralistic Composition

- Composition of the GEP:
  - Around 30 experts gathered
  - Various technical fields e.g. earth sciences, metrology of radioactivity, radioecology, radiation protection, nuclear safety…
  - Representatives from IRSN, AREVA, local/national authorities, local/national NGOs, independent experts, foreign experts

Public Institutes and Administration	NGOs and independent	Industry	Foreign experts
- IRSN, InVS - Academics - Authorities	- Independent experts - Local NGOs	- Areva NC	- International REX (IAEA) - UK, Switzerland, Belgium, Israel, Luxemburg…
16 experts	**5 experts**	**3 experts**	**6 experts**

SETTING UP

Organisation and Means

- Means for pluralism
  - Plenary Group + Working Groups open to more members
  - Shared animation of groups: IRSN / independent or academics
  - Public funding, including for independent / foreign experts work
- Support of external technical expertises
  - Environmental assessment by the operator AREVA
  - Third-part assessment by the public institute IRSN
  - Relevant work from other sources (academics, independent, foreign bodies…)
  - Further studies could be recommended if needed

ADDRESSING ISSUES

Priorities / Working Groups

- Prioritary themes
  - Rehabilitation status of mill tailings storage/disposal sites
  - Environmental impacts (primarily related to liquid releases) and relevance of the actions taken or planned
  - Broader approach to address:
    - health and environmental monitoring
    - regulatory concerns and long term issues
- Issues addressed by 3 (+1) working groups
  - WG 1: Source term and releases to the natural environment
  - WG 2: Impacts on populations and the environment
  - WG 3: Regulatory framework and long term issues
  - WG 4: Measurement issues (support to other WGs)

ADDRESSING ISSUES

WG 1: Transfers to the Environment

- Rehabilitation status of disposal sites
  - Site by site approach - *Focus: Bellezane*
  - Studies: - hydraulic characteristics of the site (hydrogeology)
    - monitoring efficiency for waterborne transfers
    - efficiency of the cover for airborne transfers
  - Understanding current level of efficiency
    Assess future efficiency in various scenarios
- Transfers to the environment from liquid discharges
  - Approach by catchment basin - *Focus: Ritord*
  - Studies: - sources of radioactivity added to natural
    - efficiency of water treatment
    - retaining reservoirs and clay sediment deposition
  - Adapt water treatment and target activities to impacts

ADDRESSING ISSUES

WG 2: Environmental and Health Impacts

- Go beyond health and environmental impact assessement set forth in regulations

1	**Environmental Impact** *radiological and chemical*
2	**Health Impact** *radiological and chemical*
3	**Health monitoring**

- First application of an innovative method to evaluate impact of radioactive substances on local ecosystems
- Feasibility of quantitative evaluation of radioactive risk other than additional effective dose to reference groups
- Health monitoring: reviewing public health surveillance
- Plan to consider chemical risk

ADDRESSING ISSUES

WG 3: Regulatory Issues and Long-Term

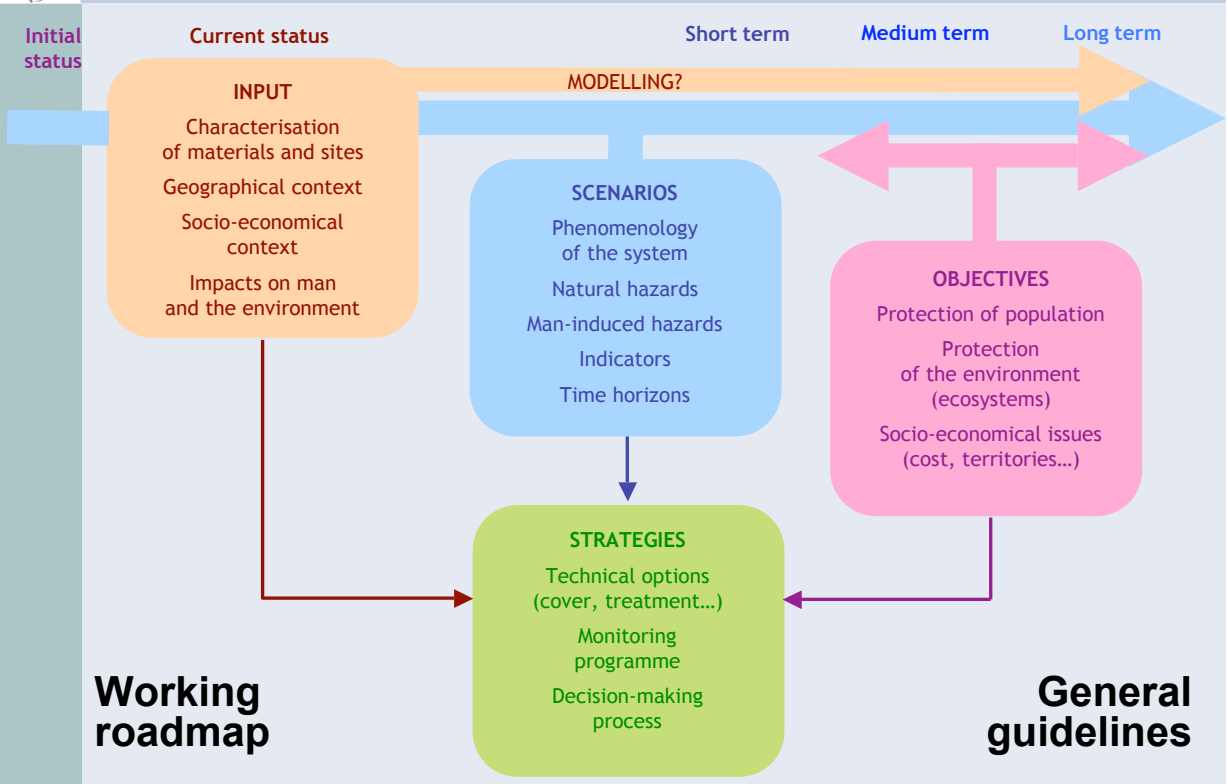
- Link technical analysis with:
  - Changing priorities in the area of environmental protection
  - Sustainability of rehabilitation works
  - Long term liability (transfer from the operator to the state)
  - Stakeholders involvement
- Past and current investigations:
  - Legal qualification of the materials and sites
    Discuss the most appropriate implementation
    of the regulatory framework for long-term management
  - Long-term aspects of monitoring
    Timescale and scenarios to consider
    Move towards less active monitoring and features

ACHIEVEMENTS / PROSPECTS

Interim "Balance Sheet"

- Operational
  - 1st interim report after 6 months, 2nd interim report end of 2007
  - first specific and local recommendations implemented
  - started reporting to local commissions in Limousin
  - website on-line: www.gep-nucleaire.org
- Added value
  - playground for broader technical and scientific dialogue
  - multiple approach, enhanced methodology
  - interlinking technical and societal analyses
    to address long term issues
- Challenge / final delivery (end of 2009)
  - from analysis of current situation to prospective options
  - from site-specific analysis to a global approach

ACHIEVEMENTS / PROSPECTS



ACHIEVEMENTS / PROSPECTS

International Perspective

- International return of experience
  - Large REX… but very few specific lessons regarding long term issues
  - Less shaped international doctrina than expected
- International openness
  - Participation of IAEA and foreign experts
  - Regular exchanges with WISMUT (March 2007, April 2008,…)
    - Different in size and context
    - Convergent in general options, with some technical differences
    - Confronted to similar issues mostly linked to long term
    - Step-by-step discussion from the comparison of general approaches down to specific issues
- **Looking forward to further international exchanges**

Thank you for your attention

More information:

Website:

www.gep-nucleaire.org (French)

Contact:

Didier Gay, IRSN
Tel.: +33.(0)1.58.35.98.27
E-mail: **didier.gay@irsn.fr**
Yves Marignac, WISE-Paris
Tel.: +33.(0)6.07.71.02.41
E-mail: **yves.marignac@wise-paris.org**