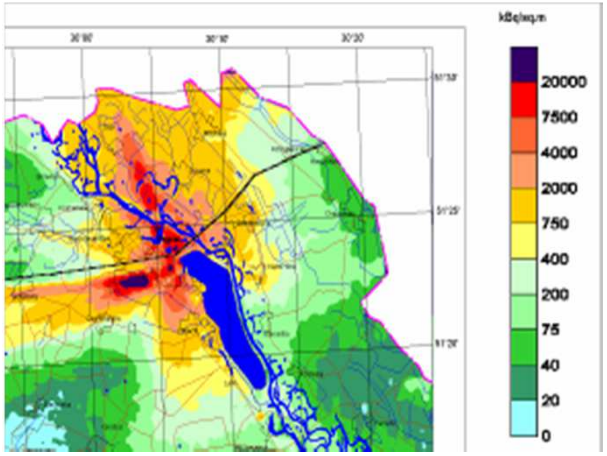

Chernobyl Cooling Pond Remediation Strategy

Review of the ongoing activities (IAEA-CN-211/7PR)

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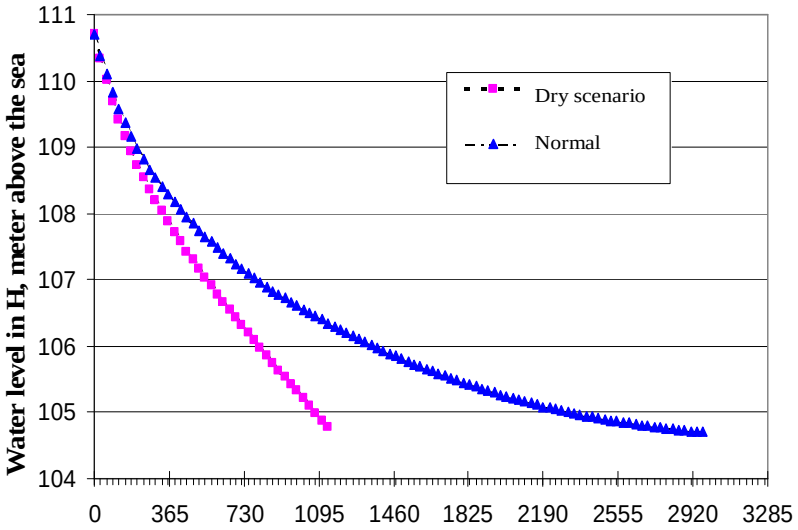
Problem

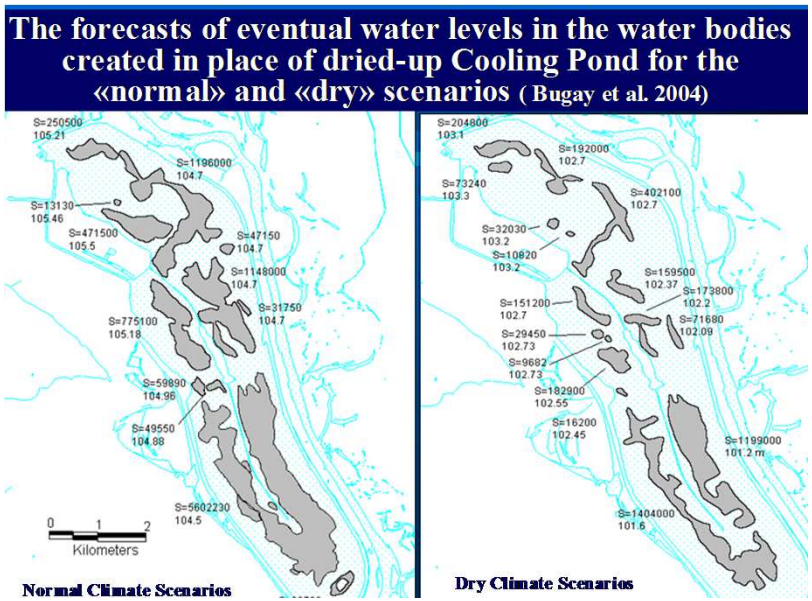
- The Chernobyl cooling pond is an artificial water reservoir that was created to cool down the heat exchangers of four nuclear reactor units at the Chernobyl Nuclear Power Plant.
- The CP is situated on the right-bank flood plain of Prypiat River and protecting dike of 25 km in length. The water elevation of the CP is near 7 m over the Prypiat river level.
- To maintain the current water level in the CP, i.e,, to compensate for water losses due to leakage (filtration) and evaporation, water is continuously pumped from the Prypiat River.
- Chernobyl NPP was shutting down in 2000, and CP currently lost its functionality as water reservoir used for heat exchange. The existing area of the CP significantly exceeds the current needs.
- The economic cost of maintaining and operating the pumps, dams and surrounding areas is high (up to 0,5 mln. US dollars).
- Therefore in accordance to the Government decision, ChNPP is going to provide the decommissioning of the CP by means to stop pumping of water, which compensating the filtration losses.
- To provide economically reasonable, radiologically safe and ecologically friendly decommissioning of the CP and long-term remediation of the site in a future is a grate challenge for ChNPP

Decommissioning Strategy

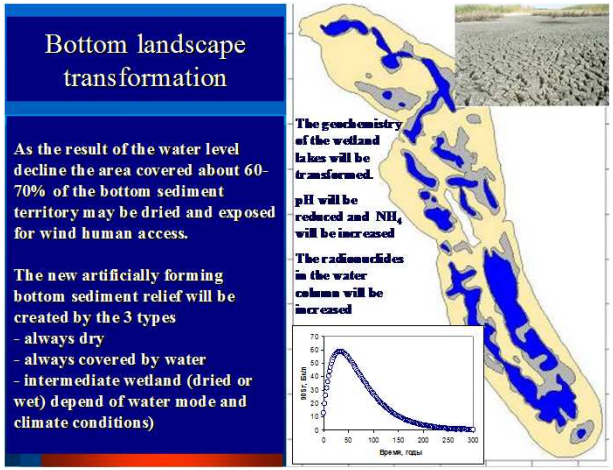
- If terminate water pumping and no action to regulate water compensation the water level will be reduced to the hydraulically equilibrium conditions with the Pripyat River reached with in 5-7 years.
- A new wetland system, with specifically high radioactive contamination and new ecosystem, will be created.
- The monitored natural attenuation seems a most reasonable strategy to be selected

- **What are a potential radiological and ecological impacts ?**
- **What time for water level declining can to be optimal for implementation of the strategy ?**

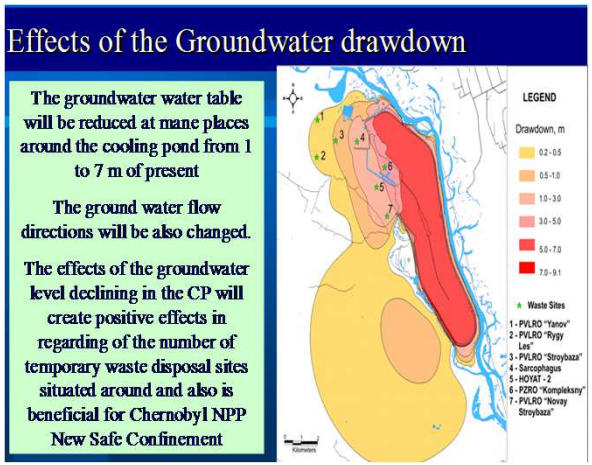


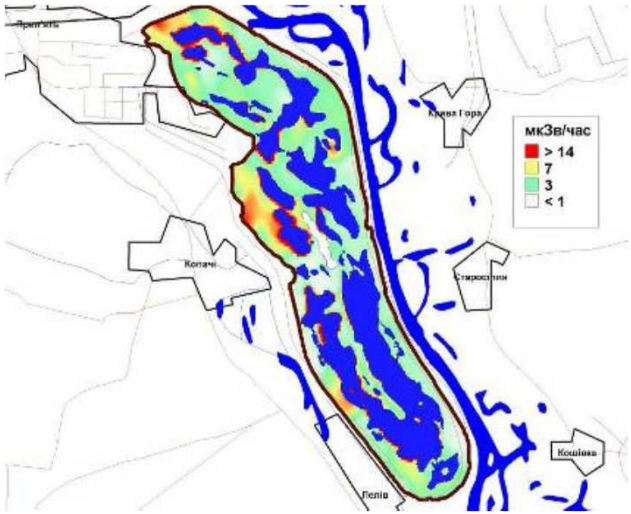


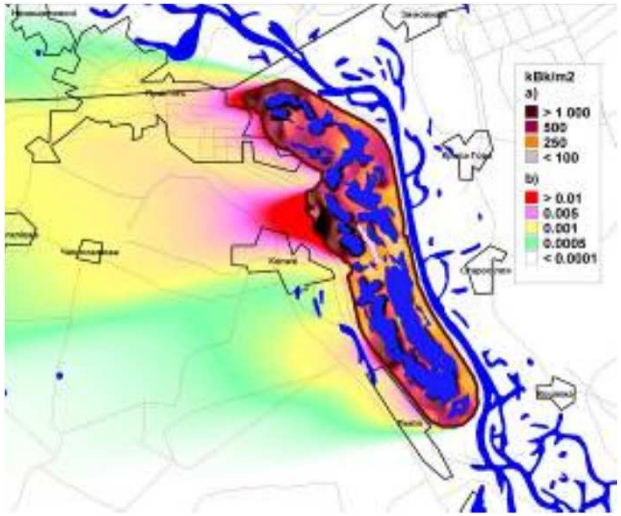
Impact assessment



Depth range, m	Bottom area in the given range		^{137}Cs		^{90}Sr	
	km^2	%	TBq	%	TBq	%
0-3,5	2.1	9,6	10	4	2	4
3,5-7,5	13.7	62,6	43	16	10	18
7,5-10,0	2.1	9,6	65	25	13	24
10,0-12,0	1.7	7,8	61	24	13	25
>12,0	2.3	10,5	81	31	16	29
Сума	21.9	100	260	100	54	100







After water level declining about 80% of Sr-90, Cs-137 activities in the CP will be accumulated in a lakes to be created in a new wetland at the place of former CP.

Dust atmospheric dispersion and fire may increase contamination of the surrounding areas no more then 5 % of existing contamination level.

No significant dose expose effects for personnel, working at the Chernobyl NPP site due to effect of wind re-suspension or grass fire at the CP (1-3 µSv**)**

Challenges

New Environment monitoring network has to be developed and re-constructed before water level declining will start.

Extended Environment Monitoring and Surveillance Program to be enhanced for Compliance with Remediation Criteria.

The future development of the CP ecosystem are still not clear (degradation, adapting to the new conditions, eutropication, succession)

Hydrochemical mode will be changed and will affect on transformation of the hot particles and radionuclide availability, and remobilization.

Comprehensive Research Program for International Studies for Physical and Chemical transformation of the Radioactive contamination Fate, Ecosystem Restoration, Radioecology and Remediation Techniques have to be elaborated. Radiobilological effects have to be studied

CP is a unique site for international research and remediation technique testing

Welcome for your questions for the poster and cooperation