Remediation of the Ammunition Waste Heap at the Burning Grounds of a Former Ordnance Factory in Elsnig (Germany)

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During the 1930ies and 1940ies production waste from the WASAG ordnance factory was burnt at the burning grounds in Elsnig. After the war until the 1990ies, the site continued to be used for decommissioning and destruction of ammunition. Ash, ammunition residues and other waste were disposed off in a heap.

The heap material is contaminated with typical compounds of explosives, such as TNT and its decomposition products (dinitrotoluene, mononitrotoluene) as well as hexogene. The concentration averages 16,000 mg per kg of dry matter. Besides, chloro- and nitrobenzene are encountered.

For the remediation of the heap more than 3,000 t of contaminated material and several hundred kilos of ammunition and explosives had to be removed.

The heap material was sieved and a magnetic separator removed the ammunition remains. Subsequently, the soil was treated biologically in the soil treatment centre of BAUER Environment Group in Hirschfeld.

Remediation site

The site is located next to a drinking water reserve. For reasons of precaution the heap was covered with foils in 1992 and a lightweight hall erected in 1998. In 2005, the first remediation phase started. Following the remediation, the recultivated areas will be used for forestry operations.

In order to avoid emissions of contaminated dust into the environment a tent cover was built and a waste air treatment plant was installed.

Results

Before the beginning of the cleanup operations a tent cover was built and a waste air treatment plant was installed in order to avoid emissions of contaminated dust into the environment. For the recovery of the ammunition remains, the heap material was sieved in two stages. A magnetic separator removed the ammunition remains, which were handed over to the State munitions recovery agency.

As the heap material contained explosive residues and live ammunition, the munitions recovery placed high demands in terms of occupational health and safety. Thus, the personnel on site wore inherent protection suits

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The munitions recovery placed high demands in terms of occupational health and safety. The personnel on site wore inherent protection suits and the wheel loader was equipped with a splinter shield.

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After the separation of the ammunition remains, the sieved soil was transported to the soil treatment centre of BAUER Environment Group in Hirschfeld. There, it was treated biologically. Nutrients and co-substrates were added to stimulate the microbial degradation of the explosive compounds.

After the treatment, the soil can be re-used as construction material in landfill construction.

Client:	Sächsische Grundstückssanierungsgesellschaft SGSG mbH, Leipzig
Planning:	Jena GEOS Ingenieurbüro GmbH, Jena
Supervision:	ARGE GICON Großmann Ingenieur Consult GmbH, Dresden Fa. Holtzmann, Berlin
Scope of Works:	Excavation and disposal off of heap material contaminated with explosives, recovery of ammunition, waste air treatment
Contract Period:	Autumn 2005 till summer 2006

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