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Ecotoxicity of waste water from industrial fires fighting

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As shown at several case studies, waste waters from extinguishing of industrial fires involving hazardous chemicals could be serious threat primary for surrounding environmental compartments (e.g. surface water, underground water, soil) and secondary for human beings, animals and plants. The negative impacts of the fire waters on the environment attracted public attention since the chemical accident in the Sandoz (Schweizerhalle) in November 1986 and this process continues. Last October, special Seminary on this topic has been organized by UNECE in Bonn.

Mode of interaction of fire waters with the environment and potential transport mechanisms are still discussed. However, in many cases waste water polluted by extinguishing foam (always with high COD values), flammable or toxic dangerous substances as heavy metals, pesticides or POPs, are released to surface water or soil without proper decontamination, which can lead to environmental accident.

For better understanding of this type of hazard and better coordination of firemen brigades and other responders, the ecotoxicity of such type of waste water should be evaluated in both laboratory tests and in water samples collected during real cases of industrial fires. Case studies, theoretical analysis of problem and toxicity tests on laboratory model samples (e.g. on bacteria, mustard seeds, daphnia and fishes) will provide additional necessary information. Preliminary analysis of waters from industrial fires (polymer material storage and galvanic plating facility) in the Czech Republic has already confirmed high toxicity. In first case the toxicity may be attributed to decomposition of burned material and extinguishing foams, in the latter case it can be related to cyanides in original electroplating baths.

On the beginning of the year 2012, two years R&D project focused on reduction of extinguish waste water risk for the environment, was approved by Technology Agency of the Czech Republic.