

SRC'09 conference
The Fourth European Security Research Conference

Stockholm, 29-30 september 2009.

Session 5 : Promising Research Projects from FP7/on-going projects

SecuEau: a european demonstration project for restoring distribution systems after deliberate CBRN attack

Sylvain FASS and Jean Claude BLOCK, Université Henri Poincaré – Nancy I, France
sylvain.fass@uhp-nancy.fr - Tel +33 3 54 50 54 37

Vulnerability of drinking water systems to deliberate attacks is one of the main questions which concerns regulatory agencies, and water utilities. Several points of vulnerability are well identified: catchment, raw water transport system, treatment facilities, finished water reservoirs, and distribution systems. The drinking water distribution systems appear very vulnerable and easy to contaminate extensively in few hours through reservoirs, back-flow, or to disturb the distribution by attacking the computer control. In particular, important units such as parliaments, offices of ministries, hospitals and other large public buildings can be relatively threaten. Contamination of drinking water distribution systems with CBRN as a result of malevolent acts of sabotage represents one of the major challenge that security has to face with. As a consequence, the detection of water quality deterioration in drinking water distribution systems requests new, sensitive and rapid methodologies (*de facto* combining generic cheap unspecific sensors for detecting unexpected quality variations, and rapid specific analytical methods). At last, operational procedures for decontamination of water infrastructures are needed to restore quickly the functionality of the distribution system after deliberate contamination. The size of the system, the difficulty of cleaning pipe walls, the need to rapidly identify the point(s) of intentional contamination, and the extension of the contaminated area represent many bottlenecks to be overcome. In the SecurEau programme we have recognized pipe wall / biofilms / deposits as crucial zones of deliberate contaminants accumulation which limit the success of easy detection, rapid intervention and efficient cleaning. Sorption/ desorption to/from pipe walls and deposits do control the dispersion and accumulation of contaminants throughout the network, and to the consumers. It depends both of the pipe wall nature (*i.e.* plastic *versus* corroded surfaces, organic *versus* mineral fouling...) with deposits as transient sink and source of sorbed contaminants, and the physical-chemical characteristics of the contaminants. Then detection and curative treatments will concern pipes, water bulk and deposits. SecurEau will serve as a research project for designing and implementing an effective and timely response action after drinking water distribution system contamination. The restoration of the network will provide maximum and rapid benefit to the users with limited environmental effects.