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**From Paris to London, post accidental dispersion modelling of a single point source release: The Lubrizol case study.**

*Frédéric Tognet, Marc Durif, Frédéric Meleux, Laurent Letinois, Emmanuelle Boulvert, Martine Ramel, Patrick Bodu, Augustin Colette, Bertrand Bessagnet, Laurence Rouil*

INERIS, Parc Technologique ALATA, BP2, Verneuil en Halatte 60550, (France)

*Corresponding author(s): Frederic Tognet, Frederic.Tognet@ineris.fr*

On 21-22 January 2013, an odour of natural gas has been smelled by many people in the region extending from Paris to London. Quick investigations showed that the instability of chemicals compounds in an adjustment tank in the Lubrizol industrial facility near Rouen, France, 120km north-west of Paris, caused important releases of sulphur compounds (mostly isopropylmercaptan) into the atmosphere. Numerous complaints for uncomfortable odors, headaches or nausea were collected between 21 and 22 January 2013 by the Anti Poison and toxicant Center (CAPTV), the French institute for public health surveillance (INVS) and Air Normand (regional air quality association). These recorded data included spatial and temporal information on complaints.

INERIS, through its technical support to the Ministry in charge of Ecology (MEDDE) was asked by the French authorities to model the temporal evolution of the plume during the first 48 hours of the accident. The source term was computed according to the CODERST (Environment, health and technological risks Council) as well as measurements of the site manager at emission. Dispersions modelling were carried out on both regional and local scales. The CHIMERE air quality model was driven by Météo France fields at high resolution (about 3km nationwide with the AROME model) for the large scale. Simulations at local scale were conducted using Micro Swift Spray (MSS) model with different set of meteorological data including the AROME model and surface meteorological observations.

At regional scale, modelling results show that the odorant part of the plume is well consistent with the occurrence of complaints. At local scale, using the same meteorological input data, results show a good correlation between simulations and complaints but differences appear on the afternoon of the 21<sup>th</sup> of January. Ground meteorological observations used as input data for the local scale modelling give better agreement with the complaints. As conclusion, suggestions are made for future post accidental plume reconstruction involving both modelling and observation meteorological data to improve the simulations at local scale.

***Key words: accidental, dispersion, modelling, Lubrizol, odours, meteorological input***

**Preferred topic:** Modelling air dispersion and exposure to accidental releases;

**Preferred type of presentation:** oral