A group of 25 agencies from Canada and the United States conducted a major offshore burn experiment near Newfoundland, Canada. Two lots of oil, about 50 cubic meters (50 tons) each, were released into a fireproof boom. Each burn lasted over an hour and was monitored for emissions and physical parameters. Over 200 sensors or samplers were employed to yield data on over 2000 parameters or substances. The operation was extensive; more than 20 vessels, 7 aircraft and 230 people were involved in the operation at sea.

The quantitative analytical data show that the emissions from this in-situ oil fire were less than expected. All compounds and parameters measured more than about 150 meters from the fire were below occupational health exposure levels; very little was detected beyond 500 meters. Pollutants were found to be at lower values in the Newfoundland offshore burn than they were in previous pan tests.

Polyaromatic hydrocarbons (PAHs) were found to be lower in the soot than in the starting oil and were consumed by the fire to a large degree. Particulates in the air were measured by several means and found to be of concern only up to 150 meters downwind at sea level. Combustion gases including carbon dioxide, sulphur dioxide, and carbon monoxide did not reach levels of concern. Volatile organic compounds (VOCs) were abundant, however their concentrations were less than emitted from the nonburning spill. Over 50 compounds were quantified, several at levels of concern up to 150 meters downwind. Water under the burns was analyzed; no compounds of concern could be found at the detection level of the methods employed. Toxicity tests performed on this water did not show any adverse effect. The burn residue was analyzed for the same compounds as the air samples. Overall, indications from these burn trials are that 150 meters or farther from the burn source emissions from in-situ burning are lower than health criteria levels.

Ten years of intensive laboratory and tank testing on the in- situ combustion of oil have indicated that the nature and concentrations of atmospheric emissions from in-situ burning of oil offshore will normally be an acceptable tradeoff when weighed against the environmental risks and cleanup costs of nearshore and shoreline contamination.

Analyses conducted to date have shown that the high temperatures reached during efficient in-situ combustion results in relatively complete destruction of the oil.[4] Fire-resistant containment booms developed over the past few years offer the potential, under suitable wind and sea conditions, to maintain oil at a suitable thickness for burning at sea and to contain undesired spreading of the oil and the fire.

Based on the current state of knowledge regarding burning as an oil spill countermeasure, the next logical extension of the technology was the controlled experimental release and burning of oil under realistic, full-scale field conditions. Such an experiment, designed according to rigorous scientific protocols, would allow the identification and quantification of the chemical compounds associated with