

Science for Environment Policy

Potential long-term health impacts for oil spill clean-up workers

A new study of clean-up workers seven years after the 2002 *Prestige* oil tanker spillage has found potential evidence for long-term impacts on their hormonal and immune systems as a result of exposure to the oil. The results suggest new health surveillance measures may be appropriate for workers involved in future oil clean-up operations.

In November 2002, the oil tanker *Prestige* ran into trouble and sank off the coast of Northwest Spain, releasing around 63,000 tonnes of heavy oil. The contamination was widespread, covering more than 1,000 km of Spanish, French and Portuguese coastlines. To minimise the impact of the spill on [marine and coastal ecosystems](#), a huge clean-up operation was launched, lasting over 10 months and exposing more than 300,000 workers to the oil. Heavy oil exposure has previously been linked to a range of acute [health](#) problems, including respiratory symptoms and changes in mental health scores.

The *Prestige* spill was the first time that the impact of oil exposure to hormonal and immune systems of clean-up workers was investigated. Earlier studies have found changes in many of the workers' immune systems, which were suppressing the 'stress hormone' cortisol. Others have found significant changes in the levels of certain white blood cells and immune system signalling molecules called 'cytokines' in people who had been exposed to the oil for several months.

To determine if the same, or similar, hormonal and immune impacts were present seven years after the event, researchers collected blood samples from 54 of the clean-up workers. These were compared to samples from 50 individuals who were not exposed to the oil, but matched the exposed group for a number of characteristics, such as age, sex, and smoking behaviour.

All blood samples were analysed to determine differences between the two groups in levels of white blood cell types, circulating hormones and cytokines. The results were also compared to earlier measurements taken at the time of the spill. Additionally, oil spill workers were assessed based on the safety precautions used while dealing with the spill and how long they were exposed to the oil.

The majority of hormonal and immune factors were the same for both groups. However, there were significant differences in cortisol levels and levels of 'Natural Killer' (NK) cells – a white blood cell involved in fighting viral infections and cancer cells. Cortisol increased for the clean-up workers, while their levels of NK cells were lower than for the non-clean-up workers.

Workers who had not always worn a face mask during the clean-up operation showed greater signs of immune and hormonal system impacts, particularly those who did not wear masks at all. For example, concentration of the cytokine interleukin-4 was significantly higher amongst workers who had not worn a mask. Exposure time and use of other types of protective clothing did not appear to affect the results.

While the majority of hormonal and immune parameters investigated were similar between the two groups of people studied, the research has identified a potential for long-lasting hormonal and immune related effects in environmental catastrophe clean-up workers. However, the study's authors note that, since cortisol suppresses immune response, lower NK cell numbers may be an indirect effect of higher cortisol.

They suggest that health surveillance for early detection of hormonal and immunological health problems in oil-spill workers should be added to other potential risks that are usually monitored, such as poor respiratory health.



3 October 2013
Issue 344

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Source: Laffon, B., Aguilera, F., Ríos-Vázquez, J., García-Lestón, J., Fuchs, D., Valdíglesias, V., Pásaro, E. (2013). Endocrine and immunological parameters in individuals involved in Prestige spill cleanup tasks seven years after the exposure. *Environment International*. 59(0): 103–111. DOI: 10.1016/j.envint.2013.05.014

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To cite this article/service: "[Science for Environment Policy](#)": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.