Evaluation of the potential health effects of produced water in the oil and gas industry

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ABSTRACT

The purpose of this study was to discover if there is any effect of produced water on the health of those working with it and those living close to the areas where it is being managed and treated. Also this study aimed to identify if there are any mitigation measures to reduce health and environmental impact.

The quantitative research represented the major part of this study and consisted of a series of laboratory assessments and monitoring for two exposed groups of people. The first group were employees directly involved in produced water handling process. The second group were employees who also represented communities from the neighbouring villages. Internationally accepted methods for evaluation of health and environmental impact were carried out at all stages of produced water management and handling primarily for operator technicians. Sampling stations were installed for continuous monitoring to identify both environmental and health parameters.

The qualitative research data incorporated interviews of the study groups and area evaluation information. These evaluations took place during health impact assessment and were required to understand community concern and why they thought they were exposed. Health impact assessments helped to identify if community concerns were valid.

The occupational health considerations to both groups of employees from inhalation of the Produced Water odours have been reviewed by the author. Overall, study of the results has shown a complex mixture of volatile organic compounds (VOCs) in the produced water, although the amount of each individual VOC did not exceed occupational exposure limits. This complex mixture also includes heavy metals and fatty acids in amounts that are not harmful to health when compared to workplace limits. The effect would appear to be one of nuisance.

It is not appropriate to apply workplace exposure limits to residential exposures.

Further research is recommended to investigate possible health effects from exposure to produced water to residential areas.