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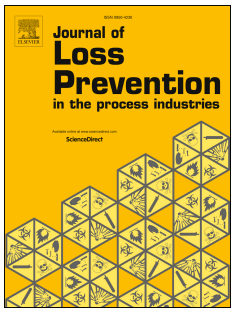

Re: Improvements of safety management system in Korean chemical industry after a large chemical accident paper by Lee, K., et al. Journal of Loss Prevention in the Process Industries

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22 October 2015

Professor Paul Amyotte
Editor
Journal of Loss Prevention in the Process Industries

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Dear Sir

On behalf of the Editorial Panel for the *Loss Prevention Bulletin*, I would like to draw your readers' attention to some factual errors and uncertainties we noted in the above referenced article by Lee, K *et al*. These errors relate to the description of the hydrogen fluoride release incident at Gumi, S. Korea, and the comparisons made between major accident responses of widely differing scenarios that are used to justify the success of the changes to the Korean regulatory framework in chemical accident response.

Set out below are detailed comments; where references are to the pdf-document version of Lee et al. as provided online. Reference is also made to numerous other documents in the public domain together with the CCTV-video of the incident:

3.1 Gu-mi hydrogen fluoride leak

'In this accident, approximately 8te of hydrogen fluoride, which is a highly hazardous chemical material, was released (Hyun et al., 2013) when the valve of the tank lorry was mistakenly opened by a worker who was injecting the gas into a facility in the factory'.

Our observations are that to date there has been no published official report of the accident. There has also been no published analysis of the causal factors. The CCTV (which is secondary, having been made by video recording a playback monitor) clearly shows two employees (presumably fitters or similarly qualified staff) on the platform of the ISO-tank. Another employee is seen at ground level attending to a piece of equipment, presumably a pump. In our view, during an industrial transfer operation of such a highly hazardous substance as anhydrous hydrogen fluoride (AHF), substantial PPE (C class air fed suit, or even D class fully enclosed suit) must be worn for any activity related to mechanical fitting duties where there is potential for AHF presence. In such cases remote operation of valves is standard practice. Remote operation of Tank Safety Valves (TSVs) is also a standard practice. This can be achieved using pneumatic solenoids, remote manual valve to isolate and