The three top injury-leading agricultural machines were Gyegong-ungi, tractor, and bush cutter.

Conclusion Agricultural machines were the main cause of occupational injuries for Korean farmers. Priority for prevention efforts should be given to more vulnerable populations (i.e., older males). For effective prevention, comprehensive strategies that incorporate engineering safety and improvement of agricultural working environment (e.g., farm road) as well as safety training and education are needed.

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1573 HYDROFLUORIC ACID: UPDATE ABOUT KNOWLEDGE ON EYE/SKIN AND RESPIRATORY EXPOSURE DAMAGES AND DECONTAMINATION

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Introduction Hydrofluoric acid (HF) is very corrosive and toxic for humans by all routes of exposures.

Materials and methods Recent ex vivo studies have been conducted on eye, skin and respiratory track in order to determine the damages induced by HF. For respiratory effects, an experiment was designed to explore HF toxicological doses and effects on mucolAir*, a unique 3D Human Airway Epithelia reconstructed in vitro. Review of current available literature on clinical data was also performed.

Results For inhalation exposure, up to 1.5 mM HF, no toxic effect was detected. From 7.5 mM, damage to epithelia were observed but could be repaired 7 days after exposure. 75 mM HF and above caused severe non reversible damage to epithelia. Ex Vivo Eye Irritation Test (EVEIT) combined with OCT allowed to characterise HF ocular burn with a complete diffusion into the cornea within 240 s for a 2.5% concentration. Ex Vivo study on human skin explants showed a diffusion in full skin within 5 min after a 70% HF exposure. Decontamination on both eye/skin ex vivo models with water alone or with calcium gluconate limited the diffusion but did not prevent all damages, whereas decontamination with an hypertonic amphoteric exposure such Hexafluorine solution avoided the diffusion and damages. This result is in agreement with the analysis of the clinical results of the literature.

Conclusion Experimental models can help to understand chemical damages from HF exposures and design management based on new tools and devices in order to provide immediate and efficient decontamination to protect exposed workers.