

CFD analysis chlorine gas dispersion in indoor storage: temperatures with wind velocities effect studies

ABSTRACT

Most of the industrial chemical products encounter natural environmental risk in the process. The indoor release of hazardous dense gases is especial topic for discussion nowadays because the clouds of heavier gases have a tendency to stay near the ground level, causing fatal and injuries the people. In this article a computational fluid dynamics (CFD) code FLUENT was employed in order to model the accidental indoor dispersion of chlorine from a small undetected leak in an indoor industrial space. The results of simulation represented that the chlorine gas spread would behave like liquid and flows on the floor, also the concentration of chlorine increased to above the ground level slowly. The effects of various temperatures and wind velocities on dispersion of heavier gas will help to better identify the potential risks. In this paper, the effects of the environmental situations with the release and spread of chlorine in the indoor space were meticulously examined.

Keyword: CFD; Indoor environment; Dense gas dispersion; Wind velocities