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## Experimental study of dense gas contaminant transport characteristics in a large space chamber

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### Abstract

Flammable gases and vapours are widely used in industrial field, which brings up the explosion risk in the large premises. In this paper, several transient experiments have been conducted in a newly built large space chamber. Sulfur hexafluoride (SF<sub>6</sub>) was released in a specific place in each experiment while the space was ventilated throughout each experiment period. The concentrations were measured and recorded at several points. Several parameters have been changed, namely air distribution pattern, air change rate, contaminant gas emission rate and contaminant source releasing method. The approximate accessibility of contaminant source (ACS) in different experiment conditions have been yielded with experimental data and compared. The dimensionless number  $(g'q_V/D)^{1/3}/U_{inlet}$  has been proposed on the basis of the passive gas criterion of  $(g'q_V/D)^{1/3}/U$  to represent the magnitude of the gas gravity effect. The experiment results show obvious correlations between ACS and  $(g'q_V/D)^{1/3}/U_{inlet}$  at different points.

Keywords: large space; dense gas; accessibility of contaminant source; contaminant distribution

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