This research investigates the flow patterns of fumes from open surface tanks captured and contained in canopy hoods for industrial application. Hydrogen bubble plume in brine was used to simulate the buoyancy effect of the fumes while the brine drawn off from the hood model was used to simulate the air exhaust. Flow visualization at different exhaust flow rates provides evidence of the capture efficiency of the test hoods. The experiment results confirmed the design data recommended by the American Conference of the Governmental Industrial Hygienists.