Drone-enabled H2S Gas Leak Detection With Geofencing for Enhanced Worker Safety

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Hydrogen sulfide (H2S) is a highly toxic gas that poses a significant health hazard in oil and gas industries. Traditional H2S gas leak detection methods are often time-consuming, labor-intensive, and dangerous. This research presents a novel approach integrating drone technology with geofencing algorithms for enhanced H2S gas leak detection and worker safety. Drones equipped with H2S sensors are dispatched to potential leak sites, providing live 4K footage to central control and marking leak locations via onboard GPS. The geofencing feature creates safety perimeters around detected H2S concentrations, and workers equipped with "toxic clips" that alert to dangerous gas levels are additionally forewarned by the geofencing mechanism upon nearing these hazardous zones.

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