Government of Western Australia
Department of Mines, Industry Regulation and Safety

Mines Safety Bulletin No. 159

Subject: Preventing worker exposure to harmful gold room exhaust discharge

Date: 18 January 2019

Background

Recent regulatory inspections identified that workers are exposed to hazardous gas, fumes and dust from gold room exhausts discharging to walkways, accessways, airconditioning intakes and adjacent buildings.

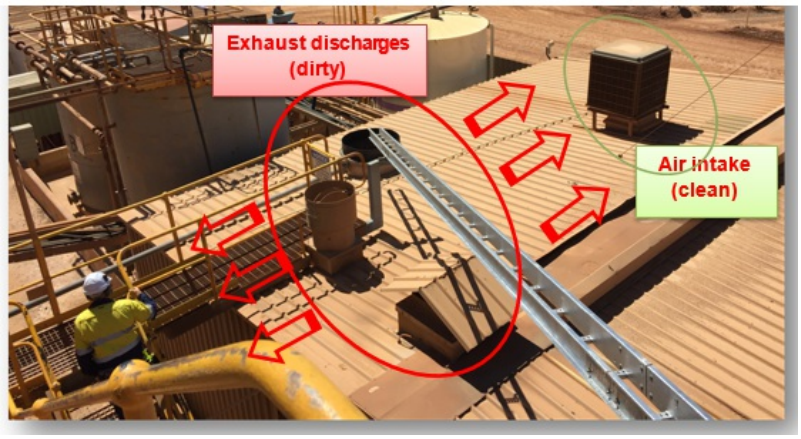
Summary of hazard

Gold room exhaust contains ammonia gas, heavy metal fumes and combustion gases such as carbon monoxide and nitrous oxides generated by the electrowinning, calcining and smelting processes. Exposures to these contaminants may lead to a variety of chronic health conditions.

Contributory factors

Exhaust discharges have been identified:

- in walkways and accessways
- near or adjacent to air intakes
- near or towards adjacent buildings
- with stacks of insufficient height to adequately disperse the contaminants



Example of a poorly placed gold room exhaust

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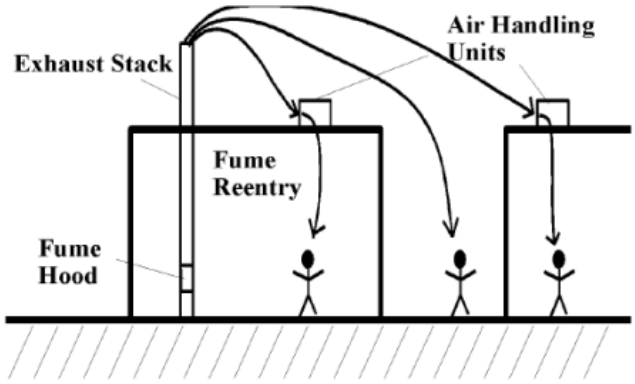

Example of fume paths from gold room exhausts

Actions required

The following actions are recommended to prevent or minimise worker exposure to hazardous exhaust discharge:

- design stack to be high enough to achieve adequate dilution
- design, construct and maintain ventilation systems with adequate flow rate and discharge velocity
- direct discharge exhausts away from walkways, platforms and accessways
- direct discharge exhausts away from air intakes
- assess the potential for exhaust gases to enter adjacent buildings, and take action to address identified concerns and improvement opportunities

Further information

- Department of Mines, Industry Regulation and Safety

  www.dmp.wa.gov.au/Documents/Safety/MSH_SB_147.pdf

  Mines Safety Bulletin No. 147 *Minimising exposure to hazardous contaminants in gold rooms*

  www.dmp.wa.gov.au/Documents/Safety/MSH_SB_150.pdf

  Mines Safety Bulletin No. 150 *Design, modification and maintenance of local extraction ventilation*

- American Conference of Governmental Industrial Hygienists (ACGIH), www.acgih.org/

  Industrial Ventilation – A manual of recommended practice for design, 29th edition (2016)

- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), www.ashrae.org/

  HI-02-15-3, Specifying Exhaust Systems that Avoid Fume Reentry and Adverse Health Effects

This Mines Safety Bulletin was approved for release by the State Mining Engineer on 18 January 2019