H2S Detection: Preventing Control Room Corrosion

Hydrogen sulfide (H2S) is emitted as an airborne contaminant in pulp and rubber manufacturing, oil refining, steel and coke production and sewage treatment. Many companies within these industries are installing expensive computers and electronic measurement and control systems. These systems are highly susceptible to corrosion from low ppb concentrations of H2S and other acidic gases, which can quickly lead to loss of system integrity or complete system failure.

To help prevent corrosion in control room atmospheres, the Instrument Society of America has developed Standard S71.04-2985, "Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminates". According to this standard, active sulfurs (H2S and mercaptans) when present at low part-per-billion levels will rapidly attack copper, silver, aluminum, and iron alloys. Active sulfurs and inorganic chlorides are the predominant cause of atmospheric corrosion in process industries.

This chart shows the effects of H2S levels in environments where the relative humidity is less than 50%. (Note that moisture and ppb concentrations of inorganic chlorine compounds greatly accelerate sulfide corrosion and could raise the severity levels much higher than those listed here.)

H2S	SEVERITY LEVELS	EFFECTS ON CONTROL ROOM ENVIRONMENTS
<3ppb	**MILD**	**Corrosion is not a factor in determining equipment reliability.**
<10ppb	**MODERATE**	**Corrosion can be measured and may affect equipment reliability.**
<50ppb	**HARSH**	**There is a high probability of corrosive attack.**
50ppb	**SEVERE**	**Only specially designed and packaged equipment would be expected to survive.**

Please contact I.S.A. Research Triangle Park N.C. for the complete standard.

The Jerome 631-X Hydrogen Sulfide Analyzer easily determines whether H2S contamination in industrial control rooms exceeds the ISA's parts-per-billion designation. The 631-X also accurately assesses the effectiveness of engineering controls and air purification systems designed to minimize H2S infiltration.

This portable, battery-operated instrument provides direct measurement of H2S from 1 ppb to 50 ppm in seconds. The 631-X also provides serial and alarm outputs.

ARIZONA INSTRUMENT LLC
3375 N. Delaware Street, Chandler, AZ 85225 • (602) 470-1414 • (800) 528-7411 • www.azic.com
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