



# Gas Detection in Water Treatment



709-368-9000



[enviromed.ca](http://enviromed.ca)



[enviromed@enviromed.ca](mailto:enviromed@enviromed.ca)



145 McNamara Drive  
Paradise, NL A1L 0A7

# About Us



- NL owned founded in 1991
- Subsidiary of Hetek Solutions in 2022
- Based in NL with nation wide support
- Providing instrumentation for a Safer, Healthier Environment
- ISO 9001:2015 Certified

# Portable and Fixed Control Systems



**SALES | RENTALS | SERVICE | TRAINING**  
**DATA RECOVERY**

# Topics for Discussion

- **What purpose is Gas Detection Anyway**
- **Water Treatment require Gas Monitoring**
- **Fixed verses Portable Gas Detection**
- **Bump Testing / Calibration / Maintenance**
- **Operator Certified Training**
- **What To Expect In The Future**

# *In Water Treatment, Do Gas Detectors*



WHY WE ARE HERE

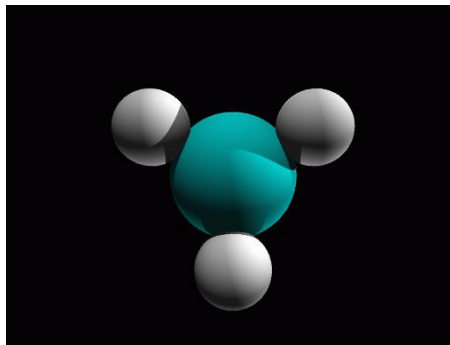
blackline**safety**

## *Have your Back?*

# What Is Gas?

## Gas

- State of matter with no definite shape or volume
- Gas molecules move randomly, colliding with each other and anything else around it. Speed depends on the temperature.
- Gas molecules will fill any available space and rapidly mix into any atmosphere



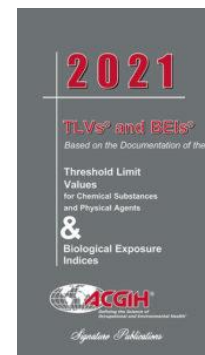
# Guidelines To Live By

## Threshold Limit Values (TLVs):

- Maximum exposure **to toxic gases** that a worker can safely be exposed to on a daily basis for a working lifetime.
- IE: Chlorine, Hydrogen Sulfide, Ammonia, etc;

Developed by ACGIH.

1. TLV-TWA: **Average exposure over 8-hr period**
2. TLV-STEL: **Average exposure over 15-min period**



**Since these TLVs are regulated, (NL, Federal, Maritime Regs) in order to be compliant, gas detectors must continuously calculate and log these averages.**

**NL Regs. Sect 42 (7) (c) An employer shall ensure that exposure of a worker to hazardous substances is as minimal as is reasonably practicable, and where a threshold limit value has been established by the ACGIH, exposure shall not exceed the threshold limit value;**



# Water Treatment Gas Detection Applications

- **Chlorination Plants and Pump Houses**  
**Cl<sub>2</sub>**                      **TWA 0.1ppm**                      **STEL 0.4ppm**
- **Wastewater Lift Stations and Manholes**  
**H<sub>2</sub>S**                      **TWA 1.0ppm**                      **STEL 5.0ppm**
- **Treatment Facilities Lagoons and Ponds**
- **Various Confined Spaces O<sub>2</sub>, CO, NH<sub>3</sub>**



# What are the Gas Monitoring Challenges?

## Challenge

- “I need to comply.”
- “I don’t have time for setup.”
- “Detectors **have to work** out of the box!” Fixed monitors must be **dependable**.
- “**It has to be easy**.”
- “Our workers need to concentrate on their jobs. **It’s dangerous**.”
- They aren’t productive”

## Solution

- Always on Charge, connected instruments.
- Real-time data feed.
- Pre-configured Pack with power, batteries. Turn-key system. Easy to turn on and use.
- Workers feel safer. Reduced stress. Higher productivity. Fewer mistakes.

# Introducing Solutions For Confined Space Issues

**For**

- **Worker Health & Safety**
- Regulatory Compliance
- Optimized Operations
- Increase productivity

**Hazards**

- **Oxygen Deficiency**
- Flammable gases
- **Toxic Gases**
- Physiological Stress



**Common Dangers in Many Situations**

# Why Communicate about and in a Confined Space?

Exposed People need **“HELP”** to make a decision re: gas concentrations or where a Man Down Alarm may occur

<b>INFORMED TRAINING</b>	<p>“Help me to take a decision”.</p> <p>“I can’t decide myself.”</p> <p>“<b>Stay in or evacuate</b> (what's the danger)?”</p>
<b>CONNECTED</b>	<p>“Make sure I understand the alarms.”</p> <p>“I can’t see or hear my gas monitor alarm.”</p> <p>“ <b>Do I have a Buddy near</b>”?</p>
<b>PROTECTED</b>	<p>“Rescue me” <b>Every Second Counts</b></p> <p>When I cannot react myself !</p> <p>(<b>“4 min” to rescue - lack of Oxygen</b>).</p>

# Typical Communication Distances

Distance between monitors / Host :

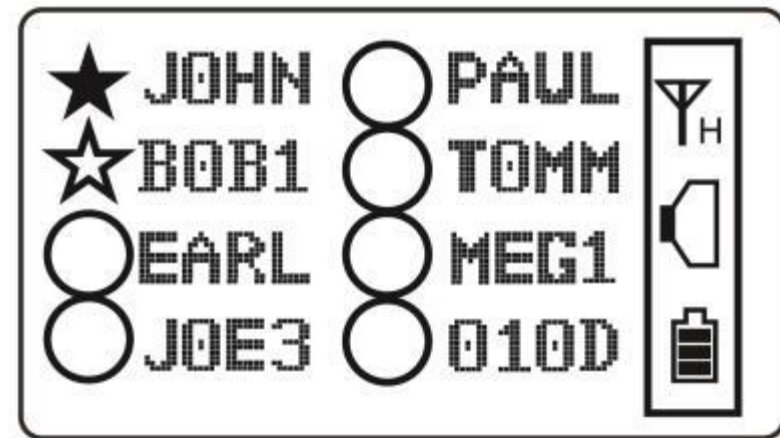
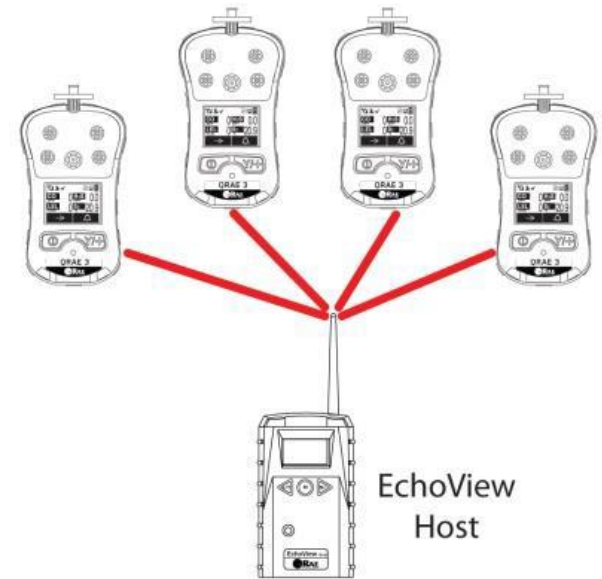
660 ft (200 m) using 900Mhz signal

15-20 ft use Bluetooth-Cell-Global

## One Team – Up to 3 Observers

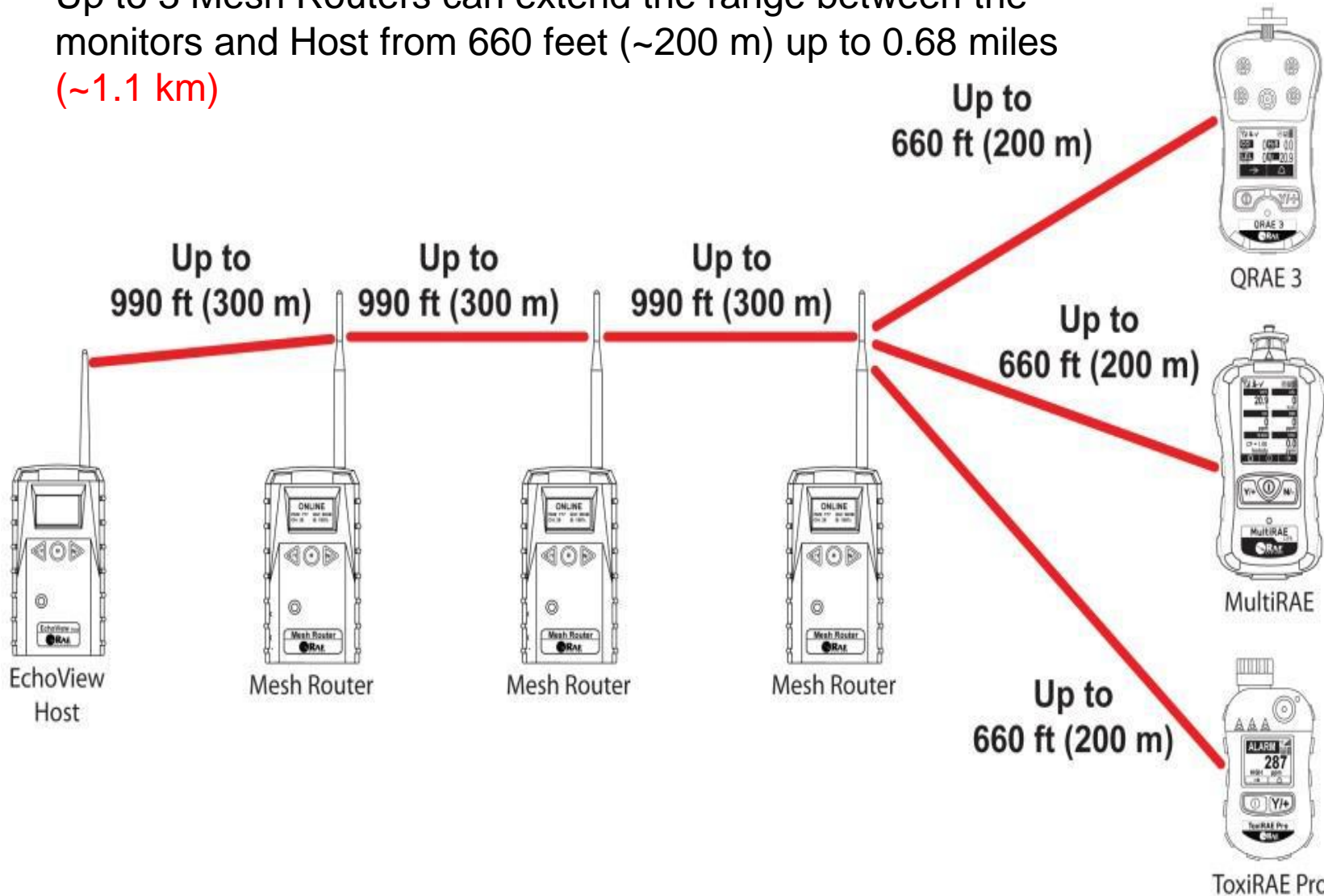
24/7 monitoring at site or 3rd party

Host User Interface can be modified by user to show either the end User's Name, Unit ID or Site Location.



# OPTIONAL - Mesh Routers

Up to 3 Mesh Routers can extend the range between the monitors and Host from 660 feet (~200 m) up to 0.68 miles (~1.1 km)





## ConneXt Pack

**Turn-Key  
Kits**



## ConneXt Plus

**Configured  
Systems**



## ConneXt Pro

**Enterprise  
Solutions**



**Team/Area**

**8**

**Task**

**Periodically**

**Hours**

**NA (Stand-alone Controller)**

**Group/Zone**

**64**

**Project**

**Routinely**

**Days**

**Portable Personal Modems**

**Facility-Wide**

**2000+**

**Operations**

**Daily**

**24 x 7**

**Fixed Area Access Points**

# Where are we going with Fixed Systems ?

- **Leak & OFF Gas Monitoring:**
  - Calibration / operation in live environment
  - Site, Vessel, Plant, Control Systems Unlimited Sensors
  - Sample capture in harsh environment
  - Dispersion Modelling advances Lagoons & Ponds
- **Real Time Data Transmission:**
  - Secure communications link (2-way) for control of & monitoring sensor channels & ventilation controls
  - Data Transfer (Local-Global)
  - Satellite & cell communications to deliver data directly to client systems.



# Why monitor Hydrogen Sulfide and Chlorine?

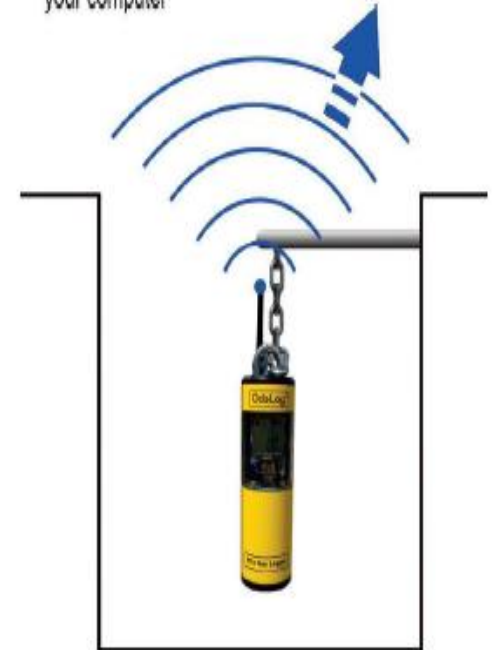


- Over Exposure Deadly to the workers and public
- Both H<sub>2</sub>S & Cl<sub>2</sub> Heavier than Air pushing out O<sub>2</sub>
- Source of corrosion to infrastructure
- Odour complaints & Ventilation Design
- Direct resources for asset protection
- Sewer rehabilitation program

# Gas Loggers for Odor Control

## *Odalog Gas Logger*

- Designed for harsh Wastewater Environments
- Long battery life of up to 12 months
- Up to 42,000 data points recording
- Free OdaStat-G software



# LONE WORKER MONITORING



- Personnel working beyond sight & sound of others
- Automatic
  - Fall detection
  - No-motion (man-down) detection
  - Employee check-in
- Manual
  - SOS latch

# BUMP TEST verses CALIBRATION

## Bump Test: A Simple Test That Could Save Your Life!

- While in operating mode simply apply a concentration of gas that can activate the alarms.

<Fixed and Portables>

## Zeroing

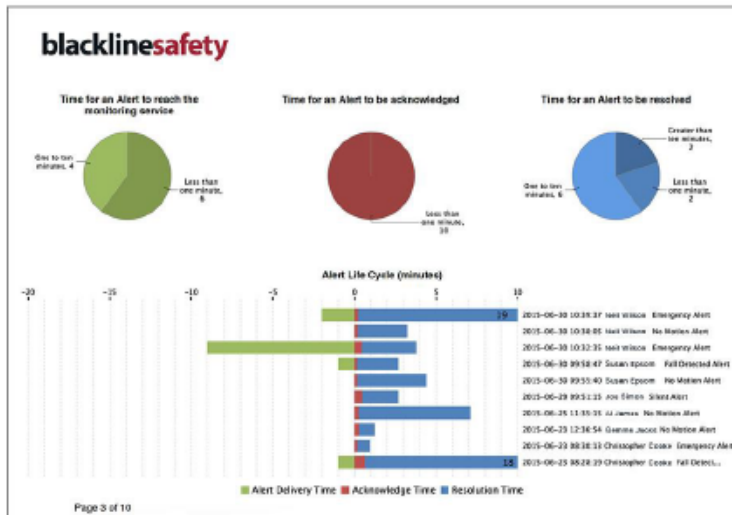
- Setting the sensor response to normal atmospheric readings.

## Calibrate or Span:

- To use a known quantity of gas to set/adjust instrument response parameters

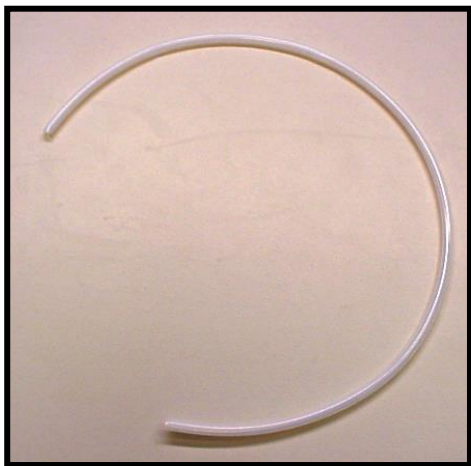
The only thing worse than a portable gas detector that you know doesn't work, is a portable gas detector that you - don't know - doesn't work. A sensor reading of Zero may also be a Faulty sensor!

# REPORTING



- Sustain a world-class safety program
- Hours of use — address gaps proactively
- Emergency response time
- Alert management performance
- All safety alerts timestamped and annotated for incident reporting

# Cautions – Sample Tubing



- ***Always use Teflon or similar non-reactive tubing***
  - Will not absorb chemicals but might get coated
  - Clean with anhydrous methanol if it gets dirty
  - Custom Lengths
  - Replace Filters Regularly
  - Check Sample Train for Leaks
- ***Never Use Tygon tubing for Corrosive Gas Monitoring!***
  - Absorbs chemicals like a “sponge”
  - Reduces ppm readout when chemicals exist
  - Causes “false positives” when chemicals don’t exist



# Our present capabilities





# Where are we going ?



**EnviroShelter for community monitoring  
Water, Air/Gas, Noise, and Meteorological  
Parameters**



**2022 Experimental VOCs Detection  
...Coming to Canada**

# Confined Space Entry Drone



# *The EnviroMed Safety Vision*

- Always on, always connected instruments
- Real-time data feed, shared across entire company
- Instruments spanning full-range Fixed, Semi-fixed, portable and personal
- “Thousands” of points, aggregated and analyzed
- Historical data is logged for future planning and analysis
- First Responders know Gas Levels prior to Entry
- Lone Worker connected to Local Response Team
- Prevention verses Event Evacuation
- Rescue Verses Recovery
- “Honey I’m Home” Everyone's Ultimate Goal?



# The Future In Rescue



# The Future in Travel

Taxi Anyone?





**THANK YOU  
FOR YOUR ATTENTION!**

-Lee Parmiter

**“QUESTIONS”**



709-368-9000



[enviromed.ca](http://enviromed.ca)



[enviromed@enviromed.ca](mailto:enviromed@enviromed.ca)



145 McNamara Drive  
Paradise, NL A1L 0A7

# One Team – Multiple Observers

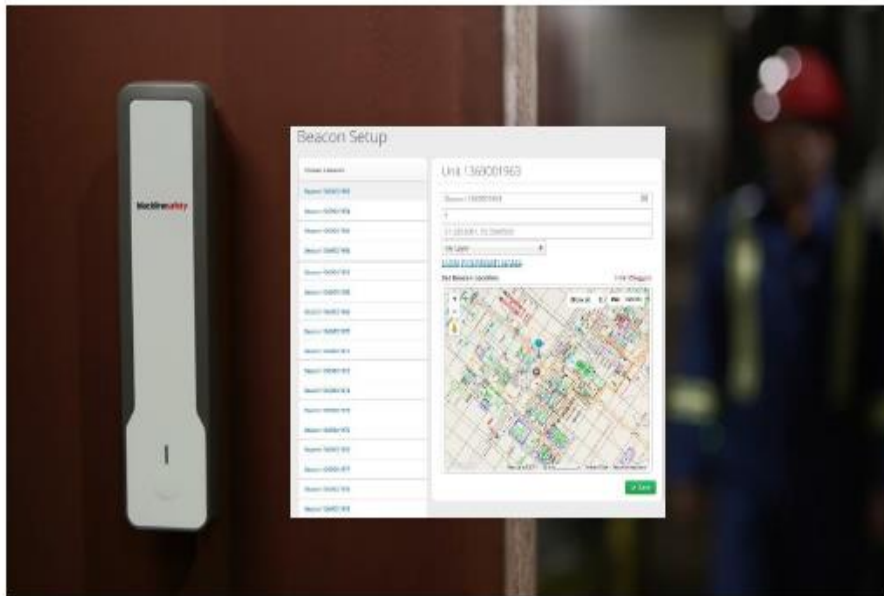


This 900Mhz system allow Up to three observers to monitor the same instruments simultaneously.

With cell and satellite- data accessibility is endless.



# LOCATION TECHNOLOGY



- Assisted-GPS for outdoor use
  - GPS signals can be blocked and reflected by concrete and steel
- Beacons provide robust proximity-based locations (inexpensive)
- Self-powered (6–8 years)
- Intrinsically safe, IP67
- Installation is 'peel-and-stick'
- Import floor and site plans

# CASE STUDY



- Kelda Water Services Defence:
- Work in partnership with the Ministry of Defence and manage a £1billion 25 year Public Private Partnership (PPP) contract
- Delivers water and wastewater services to nearly 1,100 defence sites across England and Wales.
- 83 Loner M6 devices
- Personnel working at and between water/wastewater locations