




Laboratory Capability for Mine Fire Gas Analysis

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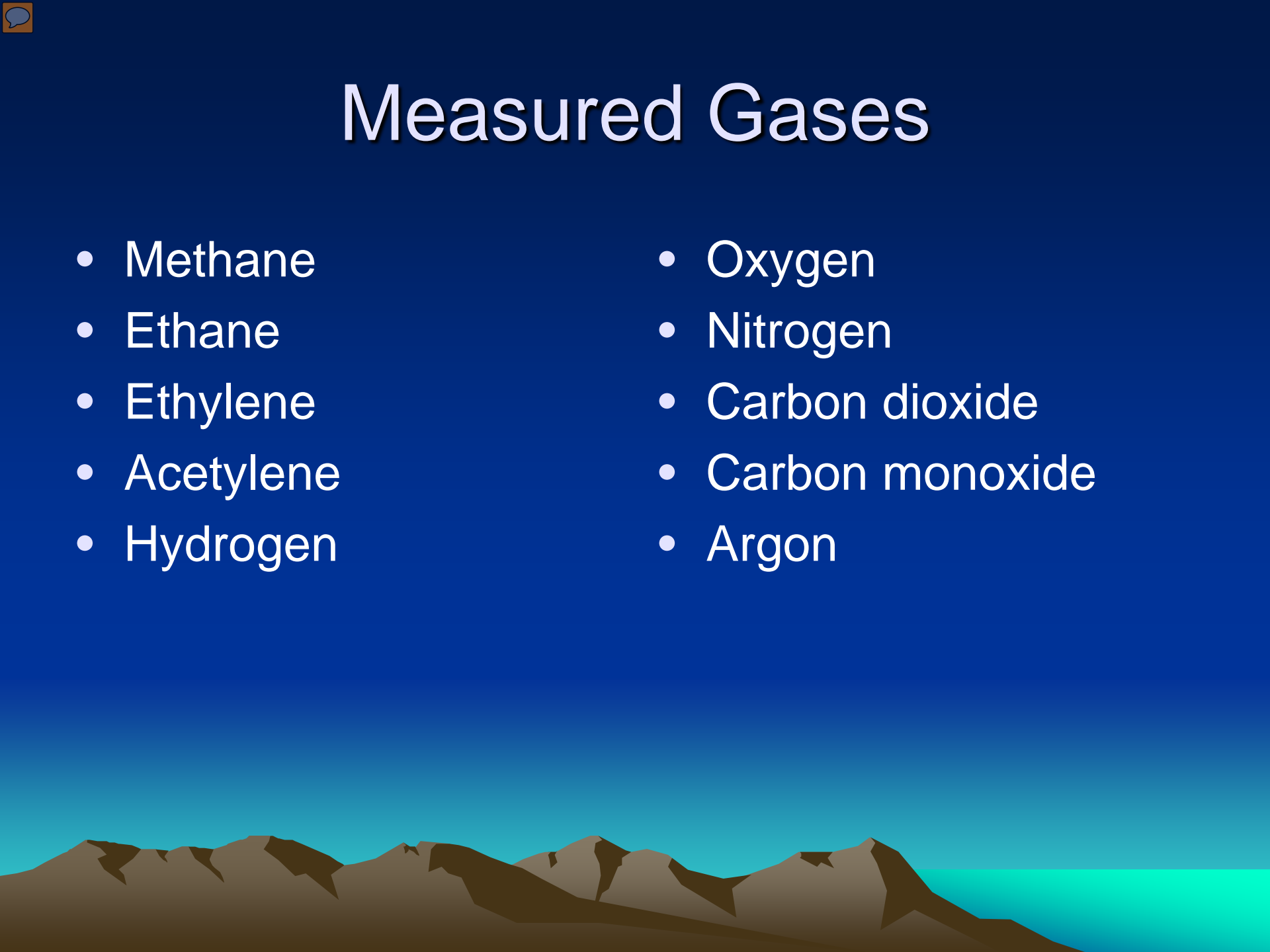


MSHA

- Gas chromatographs on-site since the 1970's
 - Used several different mobile laboratories
 - Transported gas chromatographs all over the US
 - Modern gas chromatographs better than older models
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Measured Gases

- Methane
 - Ethane
 - Ethylene
 - Acetylene
 - Hydrogen
 - Oxygen
 - Nitrogen
 - Carbon dioxide
 - Carbon monoxide
 - Argon
- 



Laboratories

- MSHA
- Illinois
- West Virginia
- Ohio




Data

- Reporting range
- Data below LOQ
- Data below LOD




Comparison

- How close values compare
 - Comparison based upon concentration
 - Sampling difference
 - Holding time for sample
- 



Standard Method

- Gases measured
 - Quantifiable range
 - Benchtop or Micro
 - Detector(s)
 - Columns
 - Gas standards/calibration
 - Carrier gas
 - How report gases
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Standard Method (cont.)

- Water vapor?
- Sampling container
- Trend vs absolute analysis



Discussion

