Hutchinson Gas Explosions
- Unraveling a Geologic Mystery

Kansas Geological Survey
University of Kansas
Thanks to:

City of Hutchinson & Hutchinson Fire Department
Hutchinson News
CUDD Drilling
KS Department of Health & Environment

Kansas Geological Survey staff
Unplugged Well at Mobile Home Explosion Site
Locations of explosion sites, geysers, and areas of known subsidence in Hutchinson, Kansas

From Interactive KanView ESRI MapServer at Kansas Geological Survey (www.kgs.ukans.edu)
Theory #1:

It can’t be geological
Major gas leak reported in S-1 well January 17th
Anatomy of a gas leak

Topsoil: 0 to 6 feet
Gas supply pipe: 9½ inch concrete casement
Sandy soil and aquifer: 6 to 70 feet
Shale rock: 70 to 580 feet
Salt layer: 500 to 600 feet thick

Pipe extends 70 feet into the salt layer

The escaped gas follows a path of least resistance where the shale and salt layers meet, looking for a release point.

Gas leak is approximately 470 feet below the surface and 16 to 20 feet into the salt layer.

Old brine wells provide an escape for the gas. Gas under pressure forces salt brine to the surface, creating salt brine geysers.

Natural gas storage cavern
Salt cavern gas storage is prepared by injecting water into a salt formation, dissolving the salt. The brine solution is pumped out, leaving a large cavity.

Groups of 16 cavities are linked by pipes at the surface.

Cavern S1
Storage capacity: 60 million cubic feet

Yaggy gas storage field
Storage capacity: 3.2 billion cubic feet

Jim Heck/The Hutchinson News
Source: Kansas Gas Service
Theory #2: Gas is moving updip through a blanket sedimentary layer
The Survey’s three main goals:

1) Make Hutchinson safe from leaking gas -- find the geologic pathways for gas movement

2) Find abandoned brine wells for proper plugging

3) Determine geologic implications for the Yaggy field and Hutchinson
Evolving Theories

#3. Gas is moving along sedimentary conduit (a channel?)
#4. Gas is moving along a dolomite facies change
#5. Gas is moving through fractured dolomite
#6. Gas is moving along a stress-induced fracture system