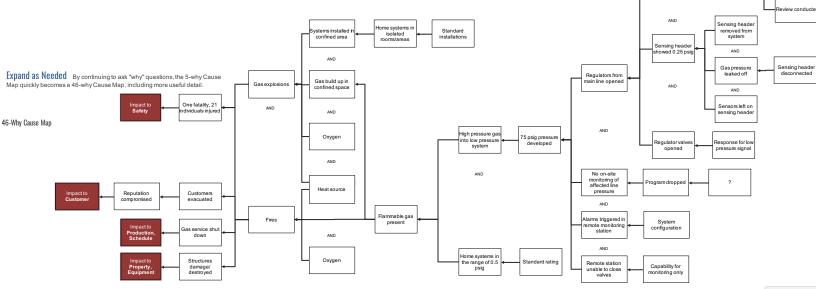
Massachusetts Gas Explosions

The Massachusetts communities of Lawrence and Andover were rocked by a series of explosions and fires, resulting in one fatality, 21 injured, the destruction of five homes and damage to more than 113 other houses. The incident, which happened around 4 p.m. on Sept. 13, 2018, led to the evacuation of thousands of residents and more than \$1 billion in damage.





Start Simple An analysis breaks a problem down into basic cause-and-effect relationships. The 5-Why Cause Map (above) is a simple and quick way to start an investigation, but with the exception of the simplest incidents you need to confine asking questions and expand the Cause Map. Adding more causes naturally leads to a wider range of solutions being considered. A quick 5-why may focused on what caused the leak and missed the fact that the natural gas leak was undetected because the cas is odorless and colorless.





Cause Mapping®

Why?

Basic Cause

Basic Cause-and-Effect Relationship

Possible: Require a

Consideration of

effect of removal

not included in

work flow

Np professional

engineer sign off

AND

Possible: Change regulation to

xemption for this

type of install

Part of pipeline

upgrade job

Possible: Implement a

management of change process for all changes

Ineffective review

removal

sensing heade

Possible: Include all impacted