



NRTLs

Nationally Recognized
Testing Laboratories

What is OSHA's "Nationally Recognized Testing Laboratory Recognition Program"?

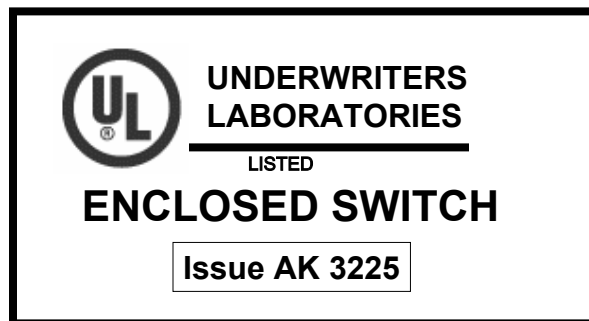
- ◆ **Seeks to prevent accidents through assuring the safety of products used by American workers**
- ◆ **Recognizes a private sector testing organization's capabilities to test and certify specific types of products for workplace safety**
- ◆ **Is administered by the Directorate of Technical Support**

NRTL Program History and Background

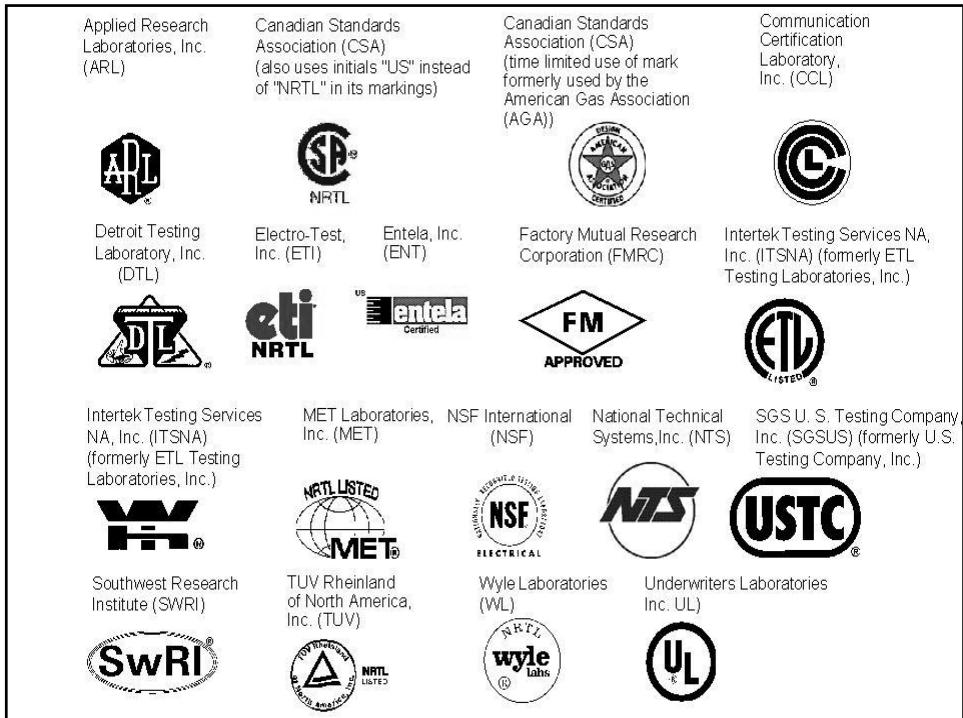
- ◆ When first adopted, OSHA regulations gave two examples of approval organizations:
- ◆ Underwriters Laboratories (UL) and
- ◆ Factory Mutual Research Corporation (FMRC)
- ◆ In 1983, OSHA was ordered by a court to remove the specific references to UL and FMRC in a successful lawsuit brought by a private lab
- ◆ In 1988, OSHA revised its regulations to remove the references, and established the NRTL Program to recognize other organizations as NRTLs

◆ 1926.403(a) Approval

- ◆ All electrical conductors and equipment shall be approved.



1910.303(a)
NEC Article 110-2



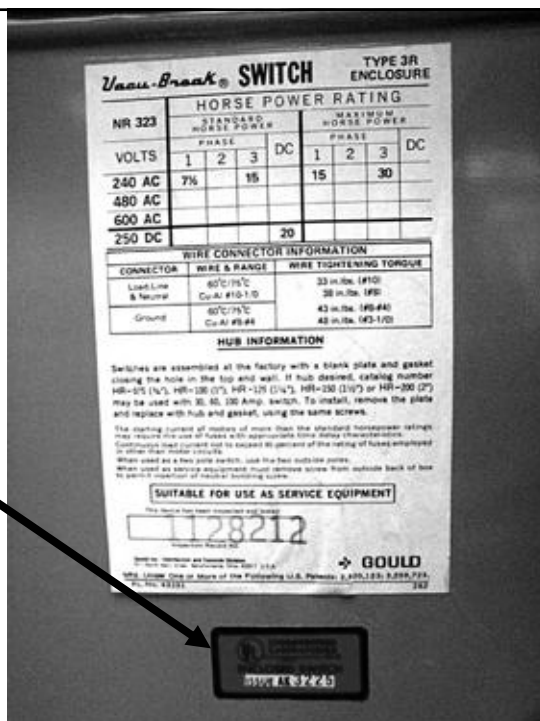
1926.403(b)(2) -

Installation and use.

Listed, labeled, or certified equipment shall be installed and used in accordance with instructions included in the listing, labeling, or certification.

UL Label

1910.303(b)(2)
NEC Article 110-3b



NRTLs are third-party organizations recognized by OSHA as having the capability to provide product safety testing and certification services to the manufacturers of a wide range of products for use in the American workplace.

The testing and certifications are based on product safety standards developed by U.S.-based standards developing organizations and often issued by the American National Standards Institute (ANSI).

Alternatives to NRTL Certification - Infrequent Exceptions

- ◆ **In certain limited circumstances, equipment covered by**
- ◆ **Subparts L and S may be acceptable without NRTL certification**

Alternatives to NRTL Certification - Infrequent Exceptions (cont'd)

- ◆ Subpart S - Electrical: Equipment is also “acceptable” if it is

A kind that no NRTL will certify and it is inspected or tested by another Federal agency, or a State, municipal, or other local authority responsible for enforcing and assuring compliance with occupational safety provisions of the NEC, or

Custom-made equipment (designed, fabricated for, and intended for use by a particular customer) determined to be safe by the manufacturer for its intended use

Requirements for Recognition

An organization must meet 4 basic criteria to be recognized

- 1 The **capability** (including proper testing equipment and facilities, trained staff, written testing procedures, and calibration and quality control programs) to **perform testing** for each item to be certified

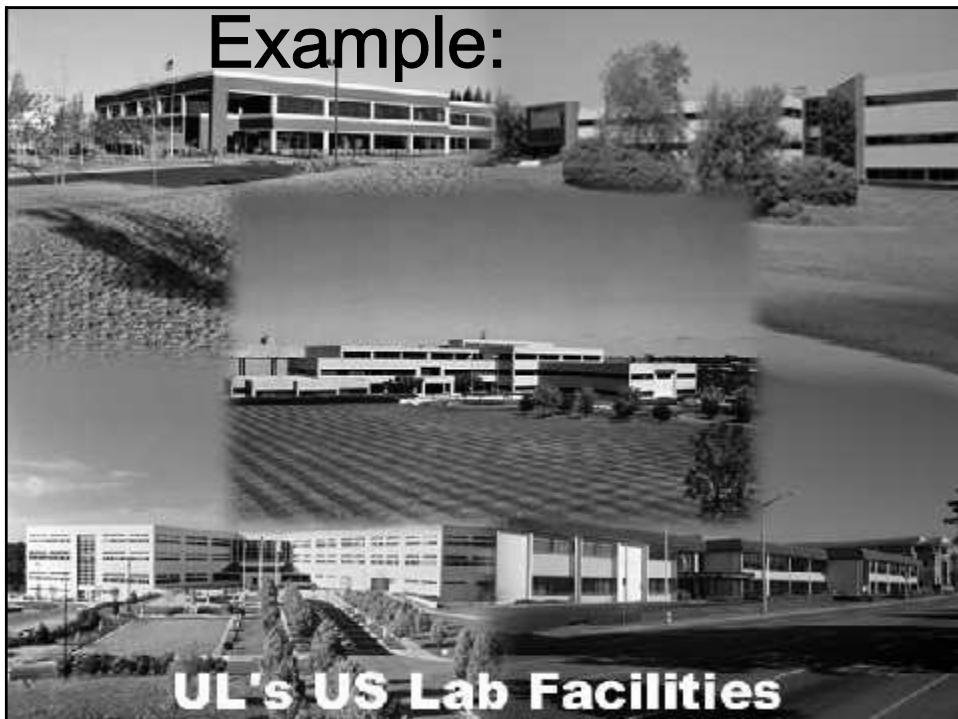
Requirements for Recognition (cont'd)

2 Adequate controls for

- ◆ Identifying the items it certifies
- ◆ Conducting follow-up inspections of the actual production of items to evaluate conformance with test standards
- ◆ Conducting field inspections to assure proper use of its marks or labels

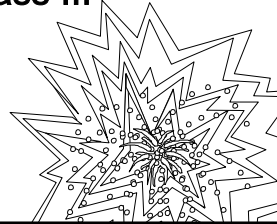
3 Complete independence from employers (i.e., users), manufacturers, and vendors of the items it tests and certifies (generally interpreted as not owned or controlled by)

4 Effective procedures for producing its findings and reports, and for handling complaints and disputes



UL Hazardous Location Laboratory

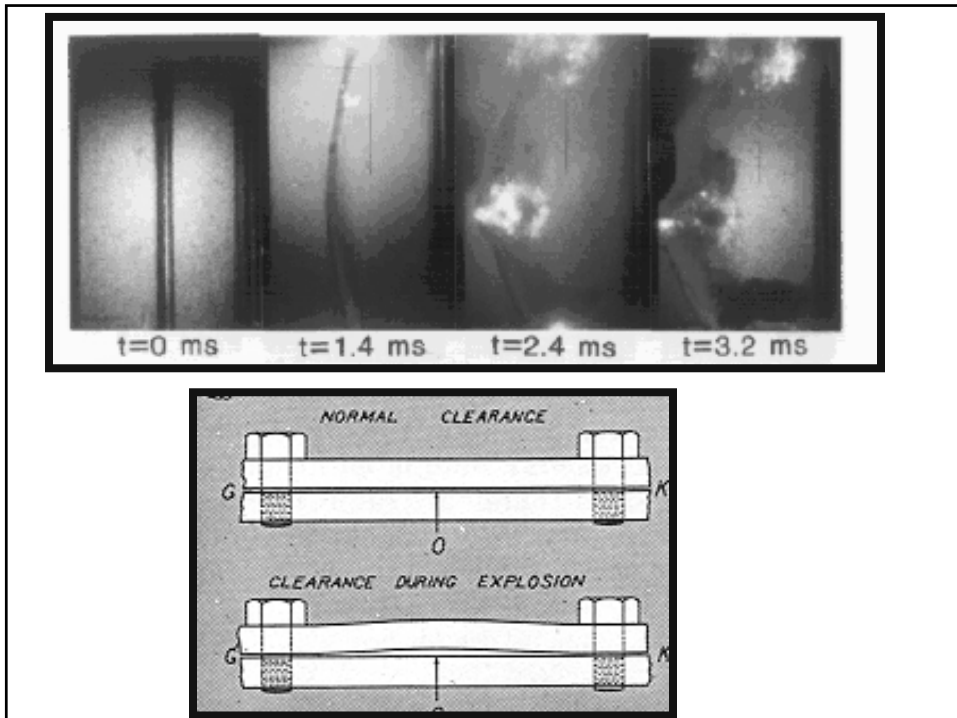
- ◆ Three categories of tests:
 - ◆ Gas and vapor testing for explosion proof equipment
 - ◆ Gas and vapor testing for intrinsically safe or non-incendive equipment
 - ◆ Dust, fiber and flying tests for Class II – dust ignition proof equipment and/or Class III equipment for fibers and flyings



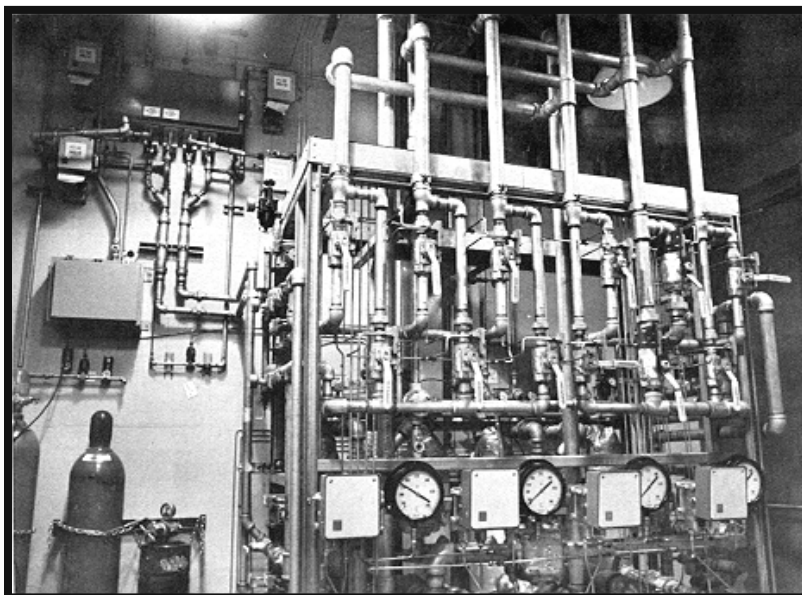
Explosion proof electrical panel

- ◆ Typical gases
 - ◆ Acetylene
 - ◆ Hydrogen
 - ◆ Ethylene
 - ◆ Propane
- ◆ Other flammable gases and vapors are also tested

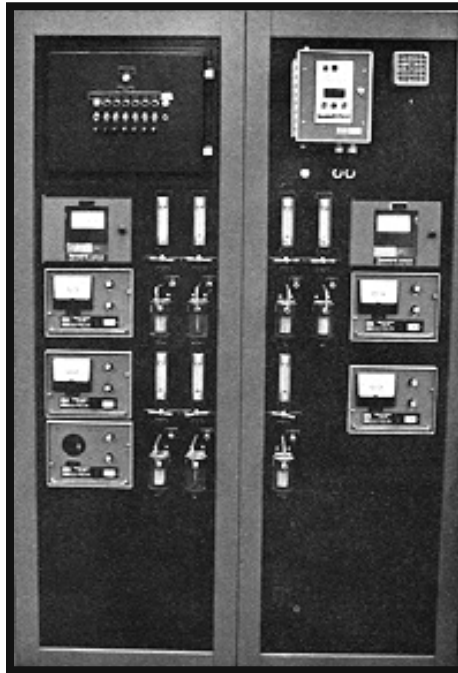




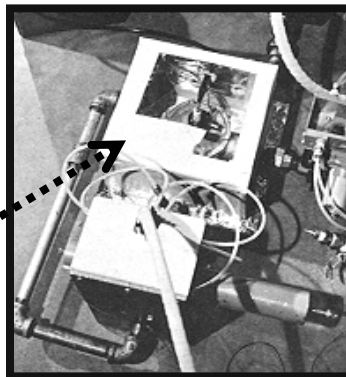
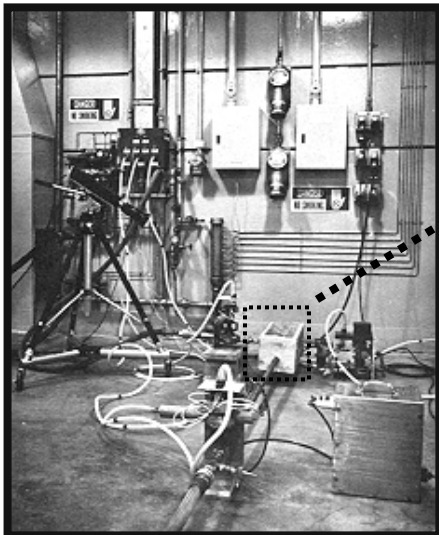
Equipment used to generate flammable mixtures

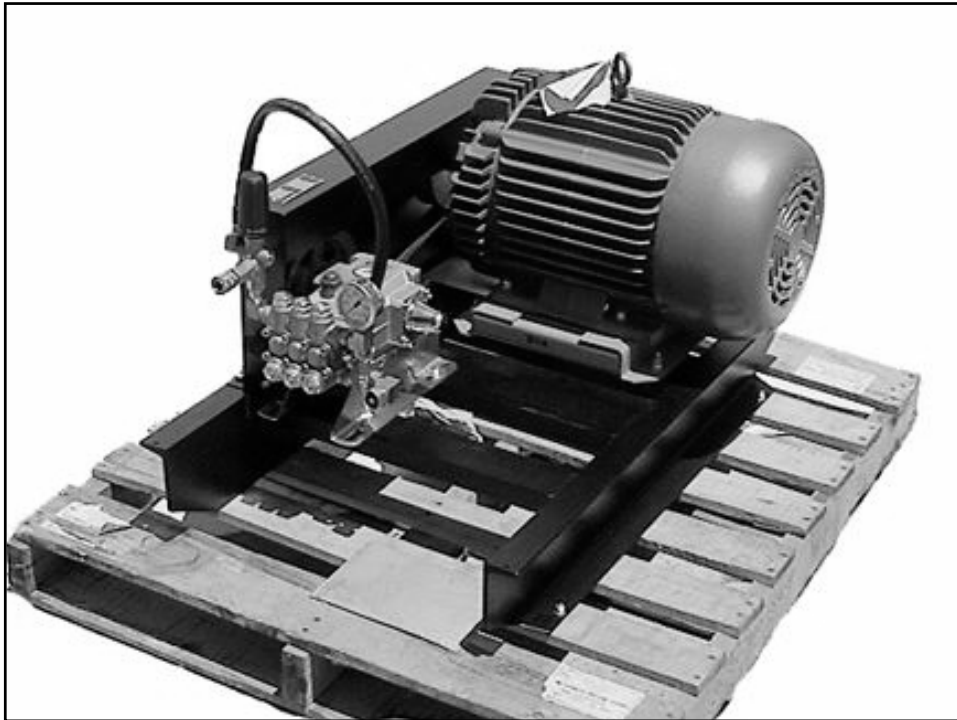


Analyzers
for gases
and
vapors
used



Test area for explosion proof
equipment





intrinsically safe and non-incendive equipment

- ◆ Radiation monitor



- ◆ Division 2 control and display equipment

Spark testing apparatus

Used to test
intrinsically
safe and
non -
incendive
equipment

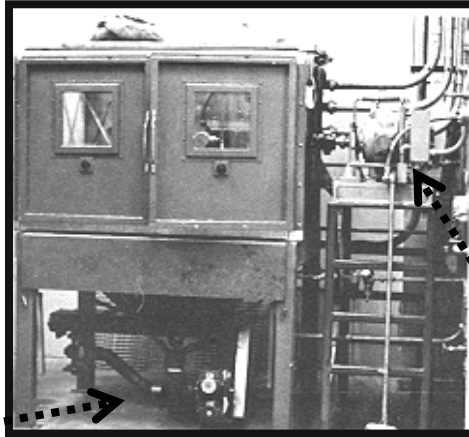


Dust explosion

- ◆ Typical dusts
 - ◆ magnesium
 - ◆ Coal
 - ◆ Grain elevator dust



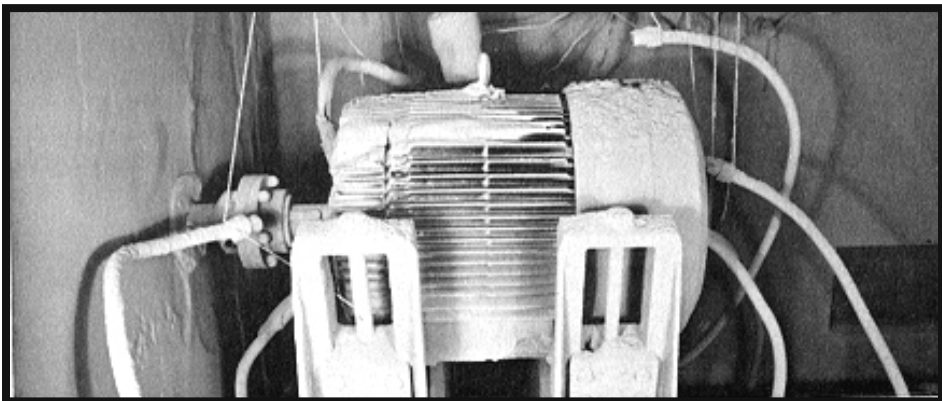
Dust testing chamber



◆ Dust collection and distribution equipment

◆ Dynamometer for motor loading

Motor in dust test chamber



◆ Dust penetration test

Explosion test control panel

