



NRTLs

Nationally Recognized
Testing Laboratories

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

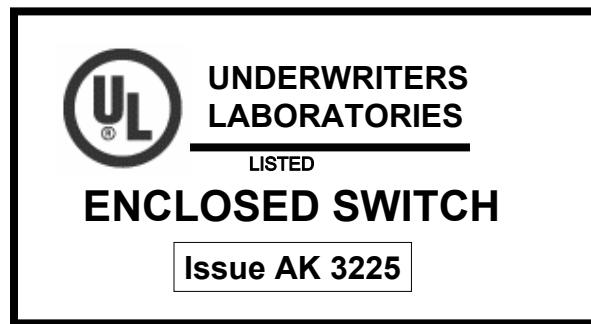
- ◆ Seeks to prevent accidents through assuring the safety of products used by American workers
- ◆ Recognizes a private sector testing organization's capabilities to test and certify specific types of products for workplace safety
- ◆ Is administered by the Directorate of Technical Support

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.



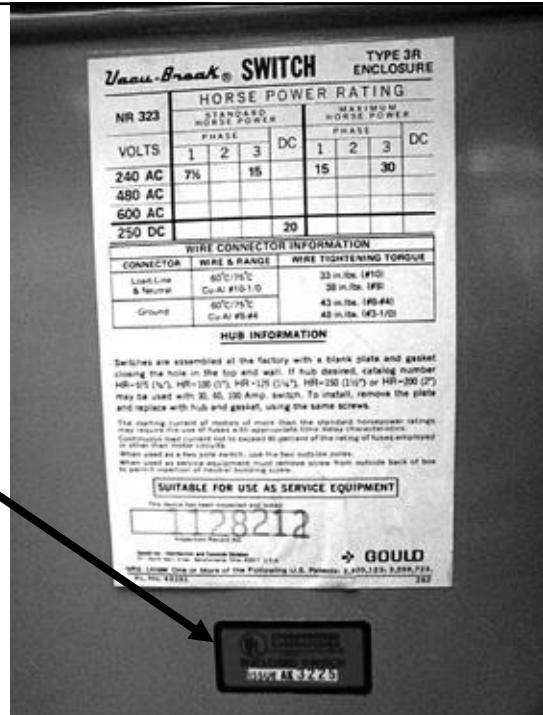
1910.303(a)
NEC Article 110-2

Applied Research Laboratories, Inc. (ARL)	Canadian Standards Association (CSA) (also uses initials "US" instead of "NRTL" in its markings)	Canadian Standards Association (CSA) (time limited use of mark formerly used by the American Gas Association (AGA))	Communication Certification Laboratory, Inc. (CCL)
			
Detroit Testing Laboratory, Inc. (DTL)	Electro-Test, Inc. (ETI)	Entela, Inc. (ENT)	Factory Mutual Research Corporation (FMRC)
			
Intertek Testing Services NA, Inc. (ITSPA) (formerly ETL Testing Laboratories, Inc.)	MET Laboratories, Inc. (MET)	NSF International Inc. (NSF)	National Technical Systems, Inc. (NTS)
			
Southwest Research Institute (SWRI)	TUV Rheinland of North America, Inc. (TUV)	Wyle Laboratories (WL)	Underwriters Laboratories Inc. (UL)
			
SGS U. S. Testing Company Inc. (SGSUS) (formerly U.S. Testing Company, Inc.)			

**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)

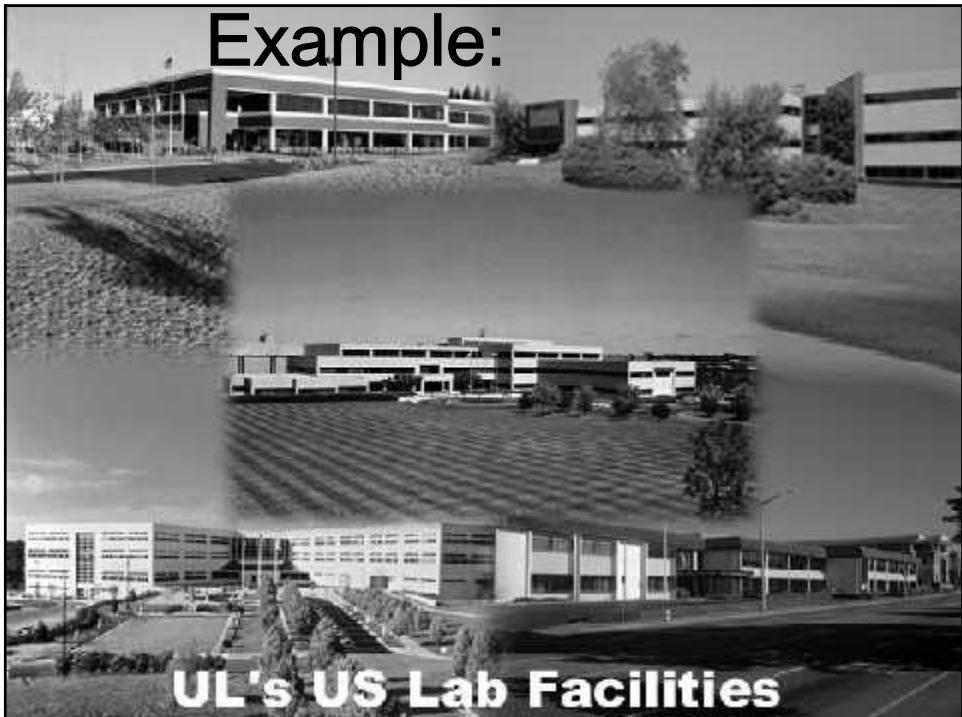
2 Adequate controls for

- ◆ 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)

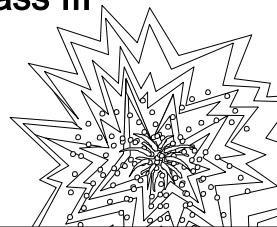
4 Effective procedures for producing its findings and reports, and for handling complaints and disputes

Example:



UL Hazardous Location Laboratory

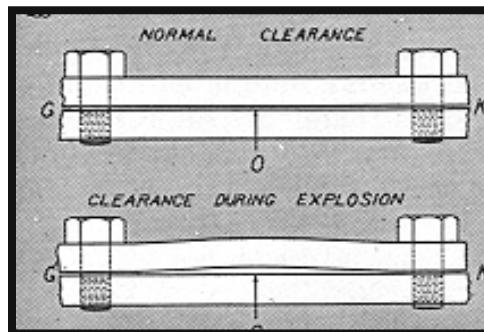
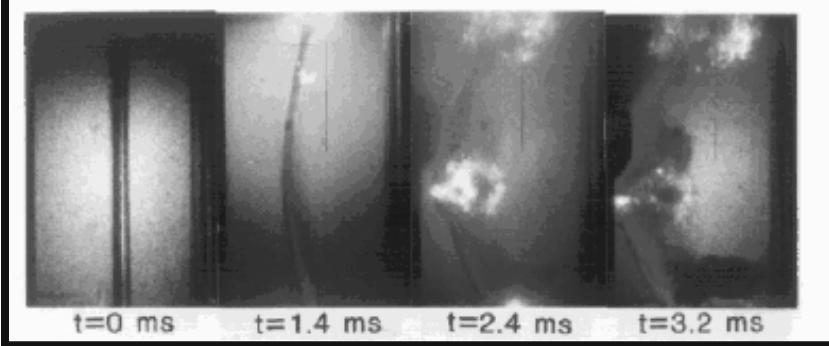
- ◆ Three categories of tests:
 - ◆ Gas and vapor testing for **explosion proof** equipment
 - ◆ Gas and vapor testing for **intrinsically safe** or **non-incendive** equipment
 - ◆ Dust, fiber and flying tests for Class II – **dust ignition proof** equipment and/or Class III equipment for fibers and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



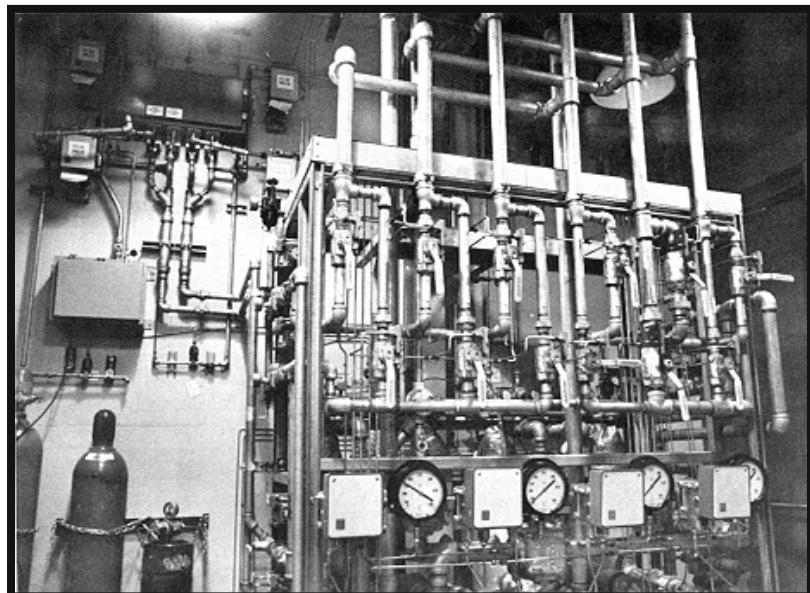
Explosion proof electrical panel

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





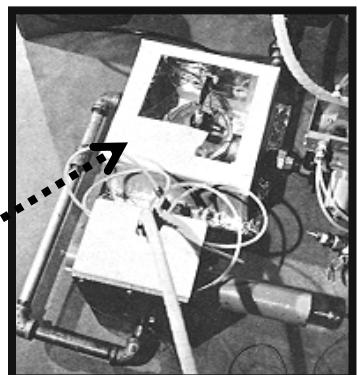
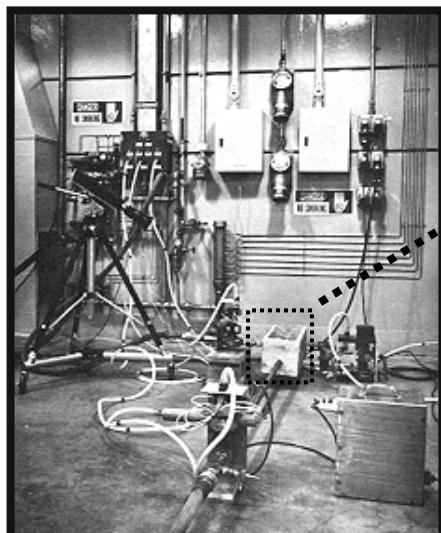
Equipment used to generate flammable mixtures

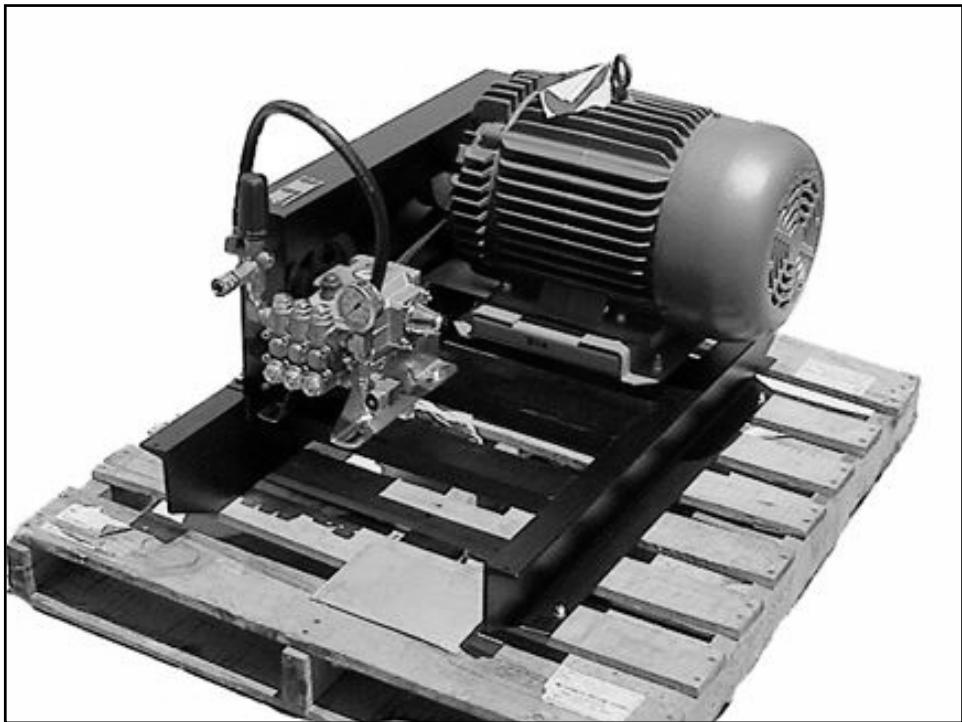


**Analyzers
for gases
and
vapors
used**



**Test area for explosion proof
equipment**





intrinsically safe and non-incendive equipment

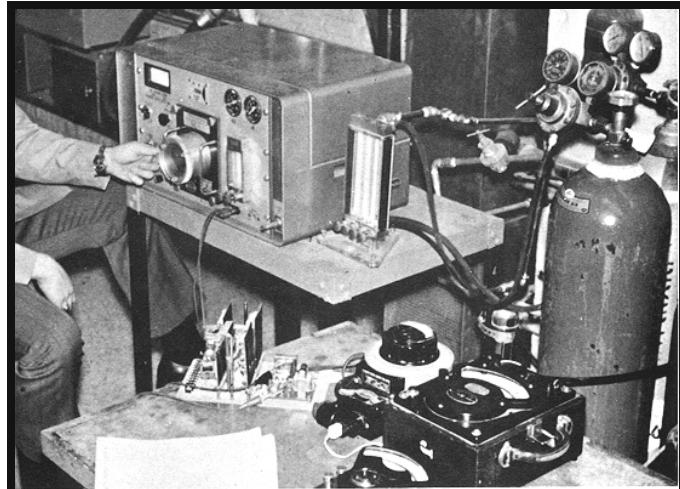
- ◆ Radiation monitor



- ◆ Division 2 control and display equipment

Spark testing apparatus

Used to test
intrinsically
safe and
non -
incendive
equipment

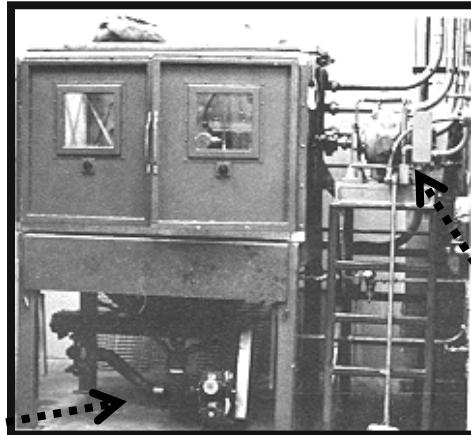


Dust explosion

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



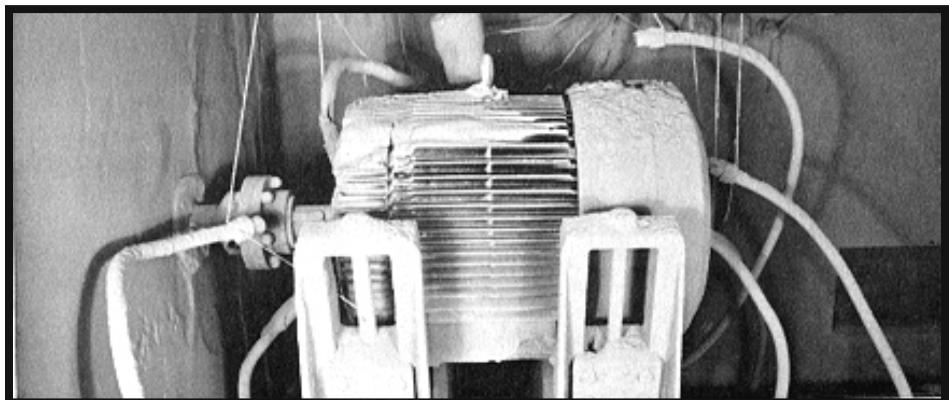
Dust testing chamber



- ◆ Dust collection and distribution equipment

- ◆ Dynomometer for motor loading

Motor in dust test chamber



- ◆ Dust penetration test

Explosion test control panel

