Inail, A Short Overwiev

Inail is a **non economic, financially independent public body** which manages in Italy the **compulsory insurance** against accidents at work and **occupational diseases.**

Since 2010 Inail's **mission** has been **widening** to also include **research**, **certification** and **inspection activities**. Therefore, Inail has taken on the strategic function of **Centre** for **Health** and **Safety** at **Work** in **Italy**.

Prevention is a most important **function** of Inail which has been **entrusted** by **law**, **along** with other **bodies**, with the task of carrying out in the **best possible way** activities of **information**, **training**, **advice**, **assistance** and **support** to **enterprises** for the full **implementation** of **regulations** in the field of **health** and **safety** at the **workplace**.

Inail, A Short Overwiev

Inail **function** in **technical-scientific** and **research sector** is performed through activities of **research**, **experimentation**, **control**, **advice**, **assistance** and **high training** with the aim of **fostering health** and **safety** in life and working environments. In particular, the **main research areas** of **interest** concern **safety technologies**, **occupational medicine** and **industrial hygiene**.

Through a **multidisciplinary approach**, Inail carries out **research**, **measurement** and **assessment** on **risks**. The **aim** is to **develop methods**, **procedures** and **rules** in line with the **technological evolution** of **systems**, **equipments** and **productive processes**.

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Risk assessment in excavation works

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Profile

- **Researcher** of **Inail** - Italian Institute for Insurance against Accidents at Work,
- Department of **Technological Innovations** and **Safety** of Plants, Products and Anthropic Settlements,
- Laboratory of **Temporary** or **Mobile Construction Sites**,
- The aim is to **develop methods**, **procedures** and **rules** in line with the **technological evolution** of **systems**, **equipments** and **productive processes** in **construction** at **height**,
- **Business** are **'Temporary works equipment' (CEN TC 53)** (like e.g. scaffolding, falsework, **trench lining systems**, safety nets, formwork, mobile access towers, edge protection systems), **'Ladders' (CEN TC 93)** and **PPE against fall from** a **height (CEN TC 160)** ,
- **Chairman** of mirror working groups **UNI 'Temporary equipment'**, **'Ladders'** and '**Protection equipment against fall from** a **height'.**

Profile

The series

Images books try out a type of communication expressed only by images.

Booklets are taken from the "Technical Books for temporary or mobile construction sites", a series - already published by Inail - concerning protective equipment, temporary works equipment and works equipment used by workers.

Texts have been deleted and drawings have been added to original images in order to provide more information for the correct use of protective equipment, temporary works equipment and works equipment.

Unfortunately, the highest rate of serious and fatal accidents occur in building sites. Besides, the prominent number of foreign workers requires an effective communication, which overcomes linguistic obstacles and provides workers with safety at work rudiments in order to prevent accidents as much as possible.

Profile

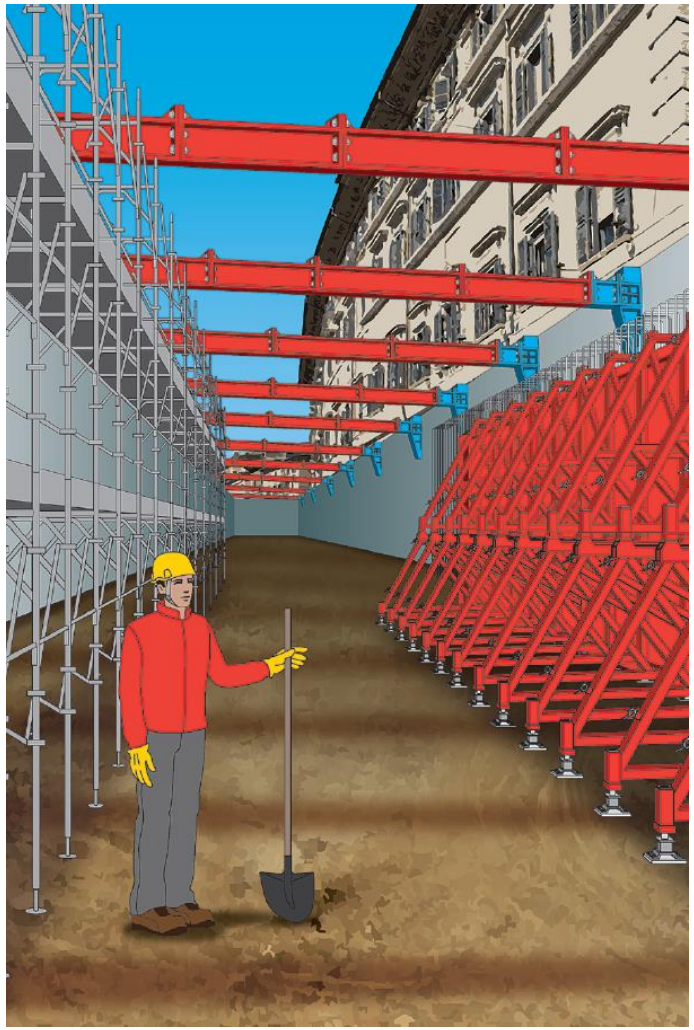
Figura 8 – Sistema realizzato con componenti prefabbricati metallici. Sistema di puntellazione per scavi con puntelli non regolabili (UNI EN 13331-1)

Picture 8 – System made of metallic prefabricated components. Trench lining system with not adjustable struts (UNI EN 13331-1)

Figure 8 – Système à composants préfabriqués metalliques. Dispositifs de blindage de tranchées avec etrésillons non réglables (UNI EN 13331-1)

Figura 8 – Sistem i realizuar me komponentë të parafabrikuar metalikë. Sistem mbrojtës gërmimesh, me puntela të pandryshueshme. (UNI EN 13331-1)

Figura 8 – Sistem realizat cu componente prefabricate metalice. Sistem cu popi de sprijin a excavațiilor pe șină de alunecare singulară cu popi nereglabili (UNI EN 13331-1)



Agenda

Introduction

Definitions

What Is Risk Assessment?

Risk Analysis

Introduction

Excavation works must be done in **safety** and under **ergonomic** conditions.

Due to the **dangerous** nature of such works, **prevention** and **protection measures must** be adopted.

Excavation works are under Title IV "Temporary or mobile construction sites" instructions of the national decree 81/08; excavation works are considered "**Building and civil engineering works**" in reference to article 105 and annex X of the national decree 81/08.

Introduction

Excavation works can be either **without risk** or **dangerous**; in the latter case they must be **performed** in **safety conditions**. If **they** are **dangerous** they **must** be **replaced** by **non-dangerous** or **less dangerous excavation works** (directive 89/391/EEC, art.6).

After works at height, **excavation works** are the **most frequent cause** of **fatal accidents** to **workers** in temporary or mobile construction sites.

In order for **works** to **begin, risks** must be **eliminated** or **reduced** to an **acceptable level**.

Introduction

Trenchless or **no dig** techniques are a class of underground construction methods that **eliminate substantial digging** and its **associated risks**.

Trenchless or **no dig** techniques **usually require** an insignificant amount of **excavation**.

The **use** of **trenchless** or **no dig** construction methods is **also** a **safe** and **sustainable** alternative.

Trenchless or **no dig** techniques are **ideal** to **understand** the use of risk assessment **methods**.

Definitions

Excavation: work that exposes a worker to burial and/or fall risk in a dig that is over 1.5 m deep referred to ground level (legislative decree 81/08).

Hazard: intrinsic property that can cause harm (legislative decree 81/08, art.2).

Risk: combination of the probability or frequency of occurrence of an event (harm) and the magnitude of that harm.

Personal protection equipment: equipment designed and manufactured to be worn or held by a person for protection against one or more risks to that person's health or safety (Regulation (EU) 2016/425, art.3).

Collective protection equipment: product designed and manufactured for protection against one or more risks to people's health or safety.

What Is Risk Assessment?

It is (art. 2 paragraph q legislative decree 81/08):

- a **total** and **documented** assessment,
- of **all health** and **safety risks**,
- to **all workers employed**, in an organization which provides those workers' activity.

Its goal is to:

- **identify appropriate prevention** and **protection measures** and
- **develop** the **program** of **measures** to **ensure improvement** of **health** and **safety levels** over time.

What Is Risk Assessment?

Legislative decree 81/08 **puts technical prevention measures**, **collective protection measures**, **methods** or **procedures** of **work organization before** personal **measures**: if risks cannot be **avoided** or sufficiently reduced, **personal** protection equipment **must** be **used**.

What Is Risk Assessment?

However, in **most cases** it is **impossible** to **eliminate** or **reduce risks** to an **acceptable** level; in these cases **organizational measures** and **collective protective measures** must be **identified** and **adopted**.

The adoption of **trenchless** or **no dig** techniques **allows**, in some cases, to eliminate **substantial digging** and its **associated risks** because the **dangerous activity** is not **carried out** (**excavation**).

This is the **case** of **horizontal directional drilling** (except microtunnelling and tunnel boring machines), of **not steerable drilling** (except pipe ramming) and of some of the techniques for **reusing** and **exploiting existing infrastructures** (pipe bursting and pipe splitting).

What Is Risk Assessment?

Trenchless or no **dig techniques show how** to **carry out** a **risk assessment** correctly.

If **dangerous activity** has **been identified** (the construction of pipeline with trench excavation) it **must** be '**replaced** by the **non-dangerous** or the **less dangerous**' activity (the construction of pipeline without trench excavation or small excavation)

In that way **risk** is **eliminated** (excavation works are not carried out) or **reduced** to a **minimum** (small excavation works are carried out).

What Is Risk Assessment?

General method for risk assessment based on legislative decree 81/08

What Is Risk Assessment?

Risk assessment procedure includes:

- risk **analysis**,
- risk **evaluation**,
- risk **reduction**.

Risk Analysis

Risks can be **divided** into **prevailing** risks, **contributing** risks and **work related** risks.

Risk Analysis

Prevailing risks

During **excavation works** the worker is **exposed** to **serious** or **permanent health damage** and the **risk** of **death**. These risks are:

- **burial** risk due to **lateral cave in** of the **dig**,
- **fall** risk due to **worker slipping** and **consequent fall**.

Risk Analysis

Contributing risks

Risk analysis **must consider** other risks:

1. **risk triggering** the **lateral cave in** of the **dig** due to:
    - **accumulation** of **materials** on the **edge** of the dig,
    - **vibrations** and **shakes** during excavation works,
    - **aquifer** presence and circulation of **fluids**.

Risk Analysis

2. **risk triggering** the **fall** in **the dig** due to:
    - **lack** of **protection** on dig **edge**,
    - **onset** of **vertigo** in worker,
    - **eye glare** in worker,
    - **poor visibility**,
    - **heatstroke** or **sunstroke** in worker,
    - **rapidly decreasing** temperature.
3. **atmospheric risk** due to:
    - **wind**, **rain**, **humidity** or **ice** on the surfaces where the dig is carried out.

Risk Analysis

Work related risks

Assessment must take into **account** all the **other risks arising** from the **execution** of the **work** and **inherent** to the work.

Thank you

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