M3-EN.9 HAND-ARM VIBRATIONS

M3-EN.9.1 Causes of health problems

M3-EN.9.2 Detection of problems

M3-EN.9.3 Preventive and safety measures

Description of chapter

The specific chapter, deals with issues concerning a number of hazardous situations originating from mechanical vibrations, as well as ways of detecting, preventing and facing health problems associated with exposure to hand – arm vibrations.

The objective of this chapter is to familiarize all personnel involved in occupational health and safety at metal processing installations, with hand-arm vibrations, in terms of human body strain, as well as preventive and safety measures that can be implemented at workplace.

M3-EN.9.1 Cause of health problems.

Frequent exposure to high levels of vibration may lead to permanent injuries. This is most likely to happen if contact with a vibrating tool is part of daily routine work.

Although occasional exposure rarely results in an injury, it should be definitely avoided by people suffering from Raynaud syndrome.

Symptoms: Frequent exposure to vibrations may cause irreversible damage to hands and arms, a condition, which is known as hand-arm vibration syndrome. The effects may concern:

- Blood circulation (white finger syndrome)
- Sensor neural damage
- Muscles, bones or joints

Health problems may be painful, for example:

- Painful white finger seizures (stimulated by exposure to either high or low temperature conditions)
- Loss of feeling and temperature sense
- Tingle and pain
- Inability to hold an object tight
- Loss of hand efficiency

The time that symptoms take to appear depends on a number of factors including the intensity of hand vibration and exposure period. People exposed to vibrations regularly, are most likely to be affected. Some people experience a number of symptoms after a few months, while others after many years of exposure.

M3-EN.9.2 Detection of problems

- Manufacturer usually states the vibration level that equipment produces at nominal operation. Using a hammer or a similar tool for more than half an hour on daily basis is considered hazardous for human health. The same goes for someone who uses a rotating tool (e.g. a lap) for more than 2 hours every day. Regular questions to personnel (every 6 months) usually prove to be valuable in locating problems. The standard questions are:
- Do hands turn white when exposed to low temperatures?
- Do hands ache or tingle each time you use a vibrating hand tool?
- Do you suffer from hand muscle or joint problems? Do you experience difficulties in handling small items such as screws or nails?

M3-EN.9.3 Preventive and safety measures

There are many prevention measures available, some of which considered low-cost, that may improve productivity and quality, such as:

- Introduce alternative ways of performing a task in order to eliminate exposure to vibrations
- Ensure that all personnel use the right tools for each task (improper equipment may stall works or produce stronger vibrations)
- Reduce exposure to equipment which produces vibrations (exchange working posts occasionally)
- Minimize continuous work intervals with vibration–producing equipment (perform other tasks in-between)
- Organize production processes in a way that leads to avoiding uncomfortable human body postures which may cause hand strain
- Perform frequent and adequate maintenance of all equipment
- Replace anti-vibration accessories frequently
- Inspect rotating parts for eccentricity and replace if necessary
- Keep cutting machinery and cutting tools sharp