

Machine safety

Prevention of mechanical hazards



Fixed guards and
safety distances

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safety distances**

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Preface

This guide mainly discusses the prevention of mechanical hazards. It describes methods for eliminating hazards at source or for reducing them, as well as ways to protect against them by using fixed guards.

The risk reduction or distance protection principles presented in the guide are general and are appropriate for the majority of machines. For some machines (for example, conveyors, metal presses, drills, rubber machines, etc.), before applying the generic solutions proposed in this guide, one should consult Québec regulations, standards relating to these machines (ISO, CSA, ANSI, etc.), or the technical guides published by the CSST (such as the guide *Sécurité des convoyeurs à courroie*), or by other organizations (ASP, INRS, IRSST, etc.), which can provide details on how to ensure the safety of these machines.

This guide is not an exhaustive collection of solutions, but it covers some of the currently known protection principles. For more information on machine safety, refer to the bibliography at the end of the document, or consult the Web site: www.centredec.csst.qc.ca.

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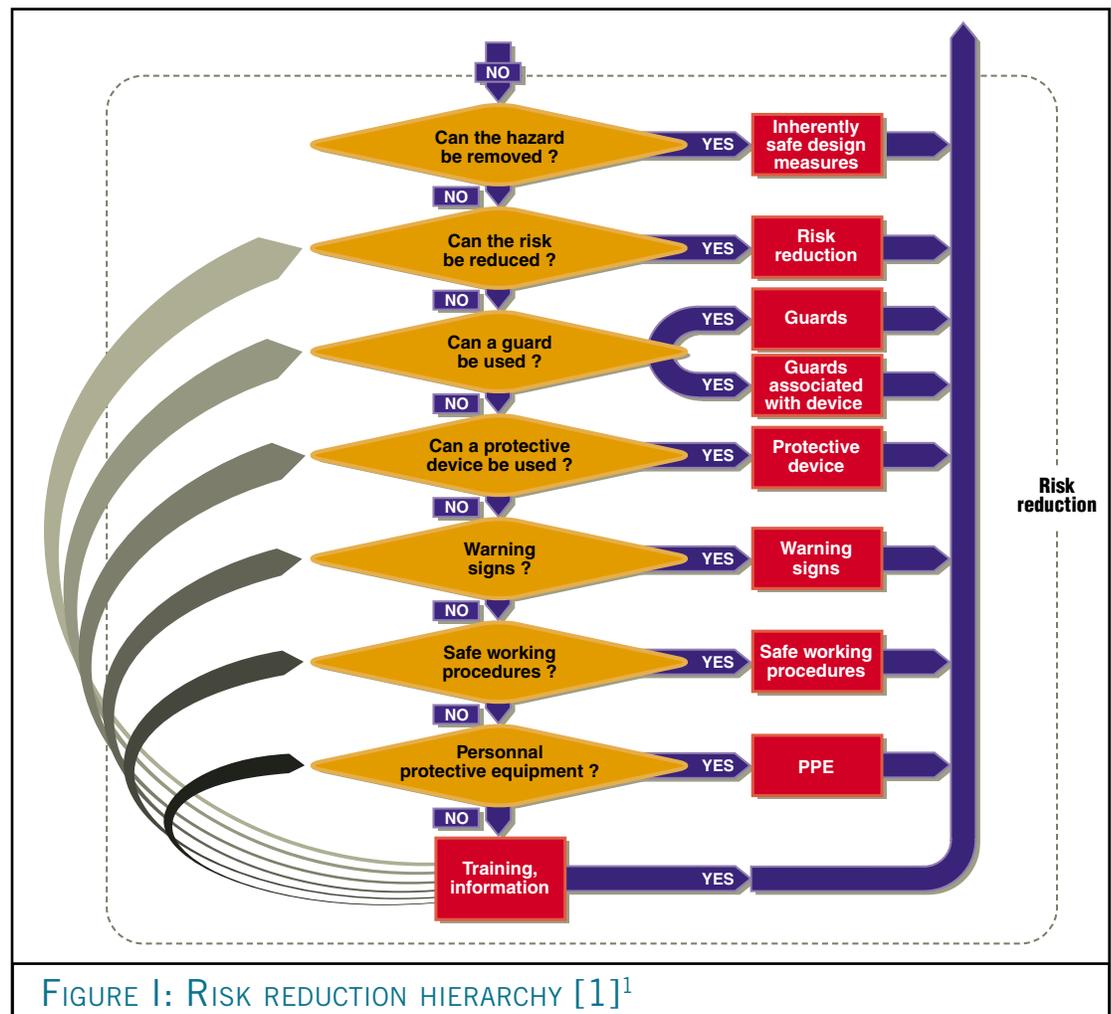
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Introduction

When machine-related mechanical hazards (refer to the quick reference in Appendix A) cannot be eliminated through inherently safe design, they must then be reduced to an acceptable level, or the hazards that cause them must be isolated from the workers by guards that allow the minimum safety distances to be respected.

Most of the risks related to mechanical hazards can be reduced to acceptable forces or energy levels (see Table 4 in point 4.2) by applying a risk reduction strategy (see Figure 1). If this is impossible, the hazards must be isolated from people by guards that maintain a safety distance between the danger zone and the people, with the main result being to reduce access to the danger zone.



The main factors to be taken into consideration so that guards are effective are:

- ▶ the accessibility to the danger zone by the different parts of the human body;
- ▶ the anthropometric dimensions of the different parts of the human body;
- ▶ the dimensions of the danger zones as well as their position in space and in relation to the ground or the working platform.

1. In this guide, references are in brackets [] and the list of references is at the end of the document.

