Safety Information in the Handbook

This handbook contains information and warnings that must be followed by the user to ensure safe operation and to maintain the instrument in a safe condition.

Possible hazards that could harm the user or result in damage to the instrument are clearly stated at appropriate places throughout this handbook.

The following safety conventions are used throughout this handbook:

W01.01

WARNING

We use the term WARNING to inform you about situations that could result in ***personal injury*** *to yourself or other persons.*
Details about these circumstances are in a box like this one.

C01.01

Caution

We use the term CAUTION to inform you about situations that could result in ***serious damage to the instrument*** *or other equipment.*
Details about these circumstances are in a box like this one.

Translations of the *numbered* warning messages used in this handbook are given in an Annex at the end of this handbook.

Before using this instrument it is essential to read the handbook carefully and to pay particular attention to any advice it contains concerning potential hazards that may arise from the use of the instrument.
The advice is intended to supplement, not supersede, the normal safety code of behavior prevailing in the user's country.

IEC 1010 Compliance

This instrument has been designed and tested in accordance with IEC 1010-1: *Safety requirements for electrical equipment for measurement, control, and laboratory use,* and Amendment 1 to this standard.

CSA Compliance

This instrument meets the Canadian Standards Association (CSA) Standard CAN/CSA-C22.2 No. 1010.1-92: *Laboratory Equipment*.

UL Compliance

This instrument meets the Underwriter Laboratories (UL) Standard UL 3101-1/Oct.93: *Electrical Equipment for laboratory use. part1: general requirements.*

Electrical Protection

Insulation
Class I as defined in IEC 1010-1.

Installation Category
This instrument is able to withstand transient overvoltage according to Installation Category II as defined in IEC 1010-1 and IEC 664.

Pollution Degree
This equipment will operate safely in environments that contain non-conductive foreign matter and condensation up to Pollution Degree 2 as defined in IEC 1010-1 and IEC 664.

Electrical Safety

To ensure satisfactory and safe operation of the instrument, it is essential that the green/yellow lead of the line power cord is connected to true electrical earth (ground).
If any part of the instrument is not installed by a Perkin-Elmer service representative, make sure that the line power plug is wired correctly:

Terminal	Cord Lead Colors	
	International	**USA**
Live	Brown	Black
Neutral	Blue	White
Protective Conductor (earth/ground)	Green/Yellow	Green

W02.01

WARNING

Electrical Hazard
Any interruption of the protective conductor inside or outside the instrument or disconnection of the protective conductor (earth/ground) terminal is likely to make the instrument dangerous.
Intentional interruption is prohibited.

W02.02

Lethal voltages are present in the instrument

- *Even with the power switch OFF, line power voltages can still be present within the instrument.*
- *When the instrument is connected to line power, terminals may be live, and opening covers or removing parts (except those to which access can be gained without use of a tool) is likely to expose live parts.*
- *Capacitors inside the instrument may still be charged even if the instrument has been disconnected from all voltage sources.*

When working with the instrument:

- Connect the instrument to a correctly installed line power outlet that has a protective conductor (earth/ground).
- Do not attempt to make internal adjustments or replacements except as directed in this handbook.
- Do not operate the instrument with any covers or parts removed.
- Servicing should be carried out only by a Perkin-Elmer Service Representative or similarly authorized and trained person.
- Disconnect the instrument from all voltage sources before opening it for any adjustment, replacement, maintenance, or repair. If, afterwards, the opened instrument must be operated for further adjustment, maintenance, or repair, this must only be done by a skilled person who is aware of the hazard involved.
- Use only fuses with the required current rating and of the specified type for replacement.
  Do not use makeshift fuses or short-circuit the fuse holders.
- Whenever it is likely that the instrument is no longer electrically safe for use, make the instrument inoperative and secure it against any unauthorized or unintentional operation.

  The instrument is likely to be electrically unsafe when it:
  - Shows visible damage.
  - Fails to perform the intended measurement.
  - Has been subjected to prolonged storage under unfavorable conditions.
  - Has been subjected to severe transport stresses.

Electromagnetic Compatibility (EMC)

European Union (EMC Directives)

This instrument has been designed and tested to meet the requirements of the EC Directives 89/336/EEC and 92/31/EEC. It complies with the generic EMC standards EN 50 081-1 (rf emissions) and EN 50 082-1 (immunity) for domestic, commercial, and light industrial environments.

This instrument has passed the following EMC tests:

Emission: EN 50 081-1:92	Immunity: EN 50 082-1:92
Emission of conducted and radiated noise EN 55 011:91 EN 60 555-2:87 EN 60 555-3:87	*Electromagnetic Compatibility* IEC 801-2:91 IEC 801-3:84 IEC 801-4:88 IEC 801-5:90

United States (FCC)

This instrument is classified as a digital device used exclusively as industrial, commercial, or medical equipment. It is exempt from the technical standards specified in Part 15 of FCC Rules and Regulations, based on Section 15.103 (c).

Environment

Operating Conditions

W01.03

WARNING

Explosive Atmosphere
This instrument is not designed for operation in an explosive atmosphere.

The instrument will operate correctly under the following conditions:

- Indoors.
- Ambient temperature +15 °C to +35 °C.
- Ambient relative humidity 20% to 80%, without condensation.
- Altitude in the range 0 m to 2000 m.

Storage Conditions

You can store the instrument safely under the following conditions:

- Ambient temperature −20 °C to +60 °C.
- Ambient relative humidity 20% to 80%, without condensation.
- Altitude in the range 0 m to 2000 m.

When you remove the instrument from storage, before putting it into operation allow it to stand for at least a day under the approved operating conditions.

Waste Disposal

Waste containers may contain corrosive or organic solutions and small amounts of the substances that were analyzed.
If these materials are toxic, you may have to treat the collected effluent as hazardous waste. Refer to your local safety regulations for proper disposal procedures.

Deuterium lamps and other spectral lamps are maintained under reduced pressure. When you dispose of lamps that are defective or otherwise unusable, handle them correctly to minimize the implosion risk.

UV Radiation

You should be aware of the health hazard presented by UV radiation.

- When the deuterium (UV) lamp is switched on, do not open spectrometer covers unless specifically instructed to do so in the handbook.
- Always wear UV-absorbing eye protection when the deuterium lamp is exposed.
- *Never* gaze into the deuterium lamp.

Chemicals

Use, store, and dispose of chemicals that you require for your analyses in accordance with the manufacturer's recommendations and local safety regulations.

WARNING

Hazardous Chemicals

Some chemicals used with this instrument may be hazardous or may become hazardous after completion of an analysis.

The responsible body (e.g., Laboratory Manager) must take the necessary precautions to ensure that the surrounding workplace is safe and that instrument operators are not exposed to hazardous levels of toxic substances (chemical or biological) as defined in the applicable Material Safety Data Sheets (MSDS) or OSHA, ACGIH, or COSHH documents.

Venting for fumes and disposal of wastes must be in accordance with all national, state and local health and safety regulations and laws.

OSHA: Occupational Safety and Health Administration (United States)
ACGIH: American Conference of Government Industrial Hygienists (United States)
COSHH: Control of Substances Hazardous to Health (United Kingdom)

Toxic Fumes

If you are working with volatile solvents, toxic substances, etc., you must provide an efficient laboratory ventilation system to remove vapors that may be produced when you are performing analyses.