
**Guidelines for assessing the adverse
environmental impact of fire
effluents —**

**Part 3:
Sampling and analysis**

*Lignes directrices pour déterminer l'impact environnemental des
effluents du feu —*

Partie 3: Échantillonnage et analyse



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 3, *Fire threat to people and environment*.

A list of all parts in the ISO 26367 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Pollution of indoor and outdoor environments by complex mixtures of physical and chemical combustion products is a causative agent of human health and environmental problems on a global scale. Uncontrolled and incomplete combustion processes are responsible for the emission of chemical and physical pollutants in quantities that affect humans and the environment.

General awareness of the fact that fires can present dramatic and persistent adverse effects on the environment has been accentuated by a number of high-impact incidents over the past half century as exemplified in ISO 26367-1. The serious consequences of such events have confirmed that the environmental impact of fires is an important issue that needs to be dealt with internationally and systematically. The ISO 26367 series provides a framework for a common treatment of the environmental impact of fires in answer to this pressing need.

This document provides references to methods for sampling and analysis of fire effluents from environmentally significant fires. It is important to understand the chemical and physical nature of the components of the fire effluents, including their concentration within the fire plume and within different recipients. It is also necessary to determine the natural levels of the same pollutants in the affected area(s) in order to establish a baseline for measurement of the environmental impact of the fire.

With fires that primarily have the potential to harm the environment it is likely that there will be fewer logistical restraints for obtaining samples from the fire effluent than those from life-threatening fires. For example, these fires can be relatively large and less confined, compared to their mainly life-threatening counterparts. The fire plume can extend for many kilometres and can deposit particles and associated chemical species over a wide area. The fire residues can contaminate the soil and as run-off, contaminate surface and groundwater courses. Sampling, although unlikely to be straightforward, is therefore feasible with standard techniques and trained personnel.

In many cases, the sampling and analysis of compounds having the potential to harm the environment have been well-documented. This document therefore provides a guide to the “best practice” methodologies for sampling and analysing specific compounds that could be present in fire effluents. The compounds and the concentration levels of interest are dependent on the goals of the user and could be outside of the limits of the recommended sampling and analysis methods referenced in this document.

A methodology for compiling the information needed to assess the environmental damage caused by a fire incident and the establishment of data quality objectives and the design of sampling programmes is included in ISO 26367-2. It also provides a standardized method for reporting the results of the compilation and findings of the analyses for use in contingency planning or for the assessment of the potential adverse environmental impact of a specific fire incident.

Guidelines for assessing the adverse environmental impact of fire effluents —

Part 3: Sampling and analysis

1 Scope

This document is applicable to the sampling and analysis of effluents produced during fires that have the potential to cause harm through environmental contamination. It provides additional requirements to those International Standards already published by ISO TC 92/SC 3 for the sampling and analysis of fire effluents from experimental fires and standard tests, specifically as best practice from previously published methodologies. This document does not include pollutant screening of exposed humans or animals.

The principle aims for the sampling and analysis of effluents from fires that can result in environmental contamination is therefore to provide information on:

- the nature and concentrations of airborne effluents over time and distance;
- the nature and concentrations of solid and liquid ground contaminants and “run-off” compounds from firefighting operations over time and distance.

This document is principally of interest for the following parties:

- environmental regulatory authorities;
- public health authorities;
- fire investigators;
- property owners.

This document is intended to be used together with ISO 26367-1 and ISO 26367-2 in assessments of the environmental impact of fire effluents.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3941, *Classification of fires*

ISO 13943, *Fire safety — Vocabulary*

ISO 14050, *Environmental management — Vocabulary*

ISO 19258, *Soil quality — Guidance on the determination of background values*

ISO 26367-1, *Guidelines for assessing the adverse environmental impact of fire effluents — Part 1: General*

ISO 26367-2:2017, *Guidelines for assessing the adverse environmental impact of fire effluents — Part 2: Methodology for compiling data on environmentally significant emissions from fires*