



PROCEDURE FOR ESTABLISHING SYENSQO ACCEPTABLE EXPOSURE LIMITS (SAELs)



IND-HSE-PRAS-05-PRO

Responsibility

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Reference Documents

IND-HSE-PRAS-05.01-GUI: Guidelines to establish a Syensqo Acceptable Exposure Limit (SAEL)
IND-HSE-IH-05-PRO: Industrial Hygiene Group Requirements for Chemical Risk Assessment and Management
IND-HSE-IH-05.01-GUI: Occupational Exposure Bands (OEBs) and Skin notation for chemicals
IND-HSE-PRAS-19-PRO: Safety Data Sheet Authoring, Revision and Distribution Procedure

When updating this document, all modifications are [in blue](#) in the text

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1. General statement

1.1 Purpose

1.1.1 This procedure describes the process to establish 'Syensqo Acceptable Exposure Limits' (**SAELs**) and the roles of the different stakeholders in this process.

The purpose of this procedure is to support the deployment of the industrial hygiene procedures and the Responsible Care policy.

1.1.2 Support information: The main aim of this procedure is to protect the health of workers thanks to the most accurate and valid knowledge about chemicals. Syensqo establishes its own occupational exposure limit values called 'Syensqo Acceptable Exposure Limits' (**SAELs**) when the company considers that the available regulatory or local values are not protective enough or they are not available for all substances.

1.2 Scope

1.2.1 This document is part of the global approach for HSE management defined by Syensqo's Responsible Care policy.

1.2.2 Compliance with local legislation and regulations regarding the topic of this procedure is the minimum Syensqo requirement. However, this procedure may, in some geographic areas, be stricter than applicable local legislation or regulations. Therefore, compliance with local legislation or regulations may not be sufficient. It is Syensqo's commitment for each site to comply with the strictest applicable requirements -- whether they appear in this procedure or in applicable local legislation or regulations.

1.2.3 For sake of clarity, mandatory requirements in this procedure are written using words like "must," or "shall." Permissive (i.e., optional) elements of this procedure are written using words like "recommended," "should," "could" or "may."

1.3 Applicability

1.3.1 This procedure applies to the **SAEL** Committee (members of IND-HSE), all GBUs and platforms, and all Syensqo sites where exposure is potentially present.

1.3.2 Entities acquired by Syensqo must comply with this procedure according to a specific Procedure implementation plan which will be defined between the entity and the IND-HSE team.

1.4 Roles and responsibilities

1.4.1 The **SAEL** Committee manages the establishment of **SAEL** values in collaboration with the different stakeholders of HSE, GBUs and sites.

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1.4.2 GBUs and sites are involved in the selection of substances for **SAEL** development. Furthermore, they should provide worker exposure data, which will be compared with the proposed **SAEL** values. More details of the requirements for GBUs and sites are provided in the sections 3.2.1 and 3.4.

1.4.3 The **SAEL** Committee is a multidisciplinary team which consists of toxicologists, industrial hygienists and occupational physicians.

1.4.3.1 The responsibility of the toxicologist members of the **SAEL** committee consists of:

- ✓ Review and approve the **SAEL** values prepared by the toxicologist (from the HSE-PRAS-TERA team) in charge of substances.

1.4.3.2 The industrial hygienist member of the **SAEL** committee ensures that:

- ✓ Potential exposures to substances at sites and/or at GBUs are reported according to the criteria described in the paragraph below (see section 2.2.2);
- ✓ An analytical method for measuring the new proposed **SAEL** value is available;
- ✓ Exposure assessments are performed according to industrial hygiene procedures;
- ✓ The applicability of the proposed **SAEL** is evaluated by quantitative exposure assessment in cooperation with the GBUs and the sites, including the need of any additional risk control measures.

1.4.3.3 The responsibility of the occupational physician member of the **SAEL** committee consists of:

- ✓ Contributing to the evaluation of the proposed **SAEL** value for its human and epidemiological relevance when human data is available;
- ✓ Contacting occupational physicians of Syensqo sites concerned by the substance, in order to check if relevant medical data of the workers exposed to the substance are available and could eventually be useful for the Committee.

1.4.3.4 The **SAEL** Committee chairman is responsible for the general management of the **SAEL** activities. This includes for example:

- ✓ The organisation of the meetings (including agenda and minutes);
- ✓ The preparation and distribution of notifications of new or revised **SAEL** values;

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- ✓ The content of the **SAEL** list (including its distribution).

2. Definitions

2.1 Definitions table

ACGIH	American Conference of Governmental Industrial Hygienists – US professional association of industrial hygienists.
OEL (Occupational Exposure Limit)	Generic term used to represent the maximum airborne concentrations of a chemical to which a worker can be exposed over a period of time without suffering from any harmful consequences. They may exist as regulatory limits issued by competent local authorities like OSHA in the US, or industry standards such as ACGIH (American Conference of Governmental Industrial Hygienists).
Syensqo Acceptable Exposure Limit (SAEL)	Internal Syensqo OEL , included into the Syensqo Safety Data Sheet (SDS). SAELs are developed for substances when no OEL exists or when existing OELs are not sufficiently protecting workers. The compliance to SAELs is compulsory within Syensqo.
SAEL TWA	The time-weighted average exposure limit - the maximum average concentration of a substance in air for a normal 8-hour working day and 40-hour week.
SAEL STEL	The short-term exposure limit - the maximum average concentration to which workers can be exposed for a short period (15 minutes).
SAEL C	The ceiling value – the concentration that should not be exceeded at any time.
Threshold Limit Value (TLV)	Specific ACGIH term for OEL corresponding to airborne concentrations of chemical substances representing conditions under which it is believed that nearly all workers may be repeatedly exposed without adverse effects.

2.2 Introduction to SAELs (Syensqo Acceptable Exposure Limits)

Occupational Exposure Limits (**OELs**) have been used for a long time as references in the evaluation and control of workplace exposures with the aim to protect workers against adverse effects when exposed to hazardous substances. **OELs** are airborne concentrations of substances below which it is believed that nearly all workers may be repeatedly exposed, day after day, without resulting in adverse health effects. More information on **OELs** is given in Appendix 4.1.

OELs may be outdated, may not be available for all substances, or workers may not be sufficiently protected by an existing OEL (e.g. national limit or TLV). As a result, Syensqo establishes its own internal exposure limits which are called: "Syensqo Acceptable Exposure Limits" (**SAELs**).

SAELs are internal Syensqo exposure limits aiming to ensure healthy and safe occupational conditions while working with hazardous substances. In general, **SAELs** are established for substances which are manufactured by Syensqo. However a **SAEL** may be derived for a substance which is not manufactured but used by Syensqo (purchased from suppliers).

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2.2.1 Different types of SAELs

For the inhalation route, three categories of **SAELs** can be specified:

1. The **SAEL TWA** of a substance is the time weighted average concentration of that substance in the workplace atmosphere to which nearly all workers may be exposed up to 8 hrs per day, 5 days per week, for up to a professional lifetime period of 40 years, without adverse health effects, attributable to that substance.
In case of work schedules which are significantly different from the standard exposure schedule (e.g. 12 hrs shifts), the **SAEL TWA** value may be adjusted to provide protection for these workers equal to workers on conventional work shifts.
2. A specific **SAEL STEL** for a substance is defined as a 15 minutes average exposure which should not be exceeded at any time during a workday even if the time weighted average exposure (based for example on 8, 10 or 12 hours) respects the **SAEL TWA**. Exposures above the **SAEL TWA** up to the **SAEL STEL** should not be longer than 15 minutes and should not occur more than four times per day. There should be at least 60 minutes between successive exposures in this range.
3. Ceiling values (**SAEL C**) are maximal concentrations in the work atmosphere, which, due to a specific acute toxicity of the substance, should never be exceeded at any time during the workday. A ceiling value has to be calculated for fast-acting substances inducing effects immediately dangerous to life or health, such as substances classified Tox. Acute. Inhalation Cat. 1 or 2, H330, strong respiratory tract irritants and substances inducing CNS suppressive effects.

These three types of values are similar to the regulatory ones.

Short definitions of these three different types of SAELs are included in section 2.1 and they are based on definitions from the International Labour Organization.

"SKIN" notation

A "SKIN" notation" is sometimes added to a **SAEL** value when a substance is known to be absorbed by the skin in sufficient amounts to contribute significantly to the total daily uptake during occupational exposure. Such a "SKIN" notation triggers a "Sp" notation (Skin penetration, used by the industrial hygienists) according to the guideline for "Occupational Exposure Bands (OEBs) and Skin notation for chemicals" (IND-HSE-IH-05.01-GUI). "Sp" notations are used to determine appropriate control measures for chemicals which might cause adverse systemic effects via the skin route.

2.2.2 Selection criteria

Thousands of substances are manufactured or used within Syensqo and it is unworkable to establish **SAELs** for such a large number of substances. Therefore a prioritisation process and strict selection criteria are used (see Figure in Appendix 4.2).

Three main criteria for the prioritisation of the substances are the following:

- Health hazardous properties of the substance
- High exposure potential to the substance, and

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- Appropriate OEL not available for the substance.

The focus is both on hazardous substances for health and on worker exposure potential.

Hazardous substances for human health are substances inducing adverse effects to the body such as carcinogens, genotoxic and reprotoxic substances, sensitizers, irritants, corrosives, endocrine disruptors and chemicals that damage organs, skin, eyes, or mucous membranes. The priority will be to focus on those with the highest effects.

The toxicologists from the HSE-PRAS-TERA team have to notify the SAEL committee if new data on adverse effects are available on a substance. The Toxicologists have also to inform the committee if there are new interpretations of existing data leading to consider the substance as hazardous for human health.

Worker exposure potential is also an important criteria in the selection of candidate substances for development of a **SAEL**. When a large number of workers could potentially be exposed or when the tonnage of the substance manufactured is very high, it could be appropriate to develop a limit. In certain cases, physico-chemical properties of a substance may additionally be taken into account. For example, a high volatility (for liquids) or a high dust potential (for solids) will increase the likelihood of exposure of workers.

The industrial hygienists from sites, GBUs and HSE Functions have to inform the SAEL committee if a possible exposure of workers to a substance or if a critical situation has been identified.

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3. Requirements

3.1 **SAEL Committee meetings**

3.1.1 The **SAEL** Committee SHALL HAVE at least 3 **SAEL** meetings per year.

Note 3.1.1

- The agenda of each meeting is prepared by the SAEL Committee chairman.
- In addition to the SAEL Committee permanent members, other toxicologists, industrial hygienists (e.g. from Fonctions, GBUs or sites), HSE managers and/or product stewards will be invited to participate in SAEL meetings and contribute to the discussions when they are concerned by specific substances.
- The meeting minutes are sent to the SAEL Committee members and persons attending the meeting, with putting in copy all the toxicologists of IND-HSE-PRAS-TERA, the IND-HSE manager, the HSE directors, the cluster managers, the industrial hygienists, industrial hygienists from the GBUs and the regional OH.

3.2 **SAEL setting**

3.2.1 The **SAEL** Committee, in collaboration with the GBUs, SHALL ASSESS the need for a **SAEL** according to selection criteria described above in section 2.2.2. Furthermore information SHOULD BE GATHERED about the manufacturing/use of the substance within Syensqo and the availability of an analytical method to measure the concentrations in the air.

Note 3.2.1

- GBUs, industrial hygienists, toxicologists or any other person can always contact a member of the SAEL Committee (see the authors of the present procedure) to request the development of a SAEL.
- The SAEL Committee will consider the proposal and will seek advice from other colleagues (e.g. toxicologists, industrial hygienists, HSE managers, product stewards).

3.2.2 Once the need for a **SAEL** is identified, the chairman of the **SAEL** Committee SHALL INFORM the concerned GBU(s) on the proposal to develop a **SAEL** for a specific substance.

Note 3.2.2

A short justification by email is sent to the following contacts: GBU's industrial director, GBU's technology managers, HSE managers, industrial hygienists and product stewards.

3.2.3 A designated toxicologist from the HSE-PRAS-TERA team SHALL CALCULATE a SAEL value based on all available hazard data (in most cases toxicological studies with animals). The toxicologist SHALL PREPARE a **SAEL** rationale using the appropriate template

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(['Rational template'](#)) and the methodology described in the “Guidelines to establish **SAELs**” ([IND-HSE-PRAS-05.01-GUI 2024.05.22](#)).

Note 3.2.3

- A SAEL rationale is a document summarising the available data and the calculation method for the elaboration of the proposed SAEL. The SAEL rationale has to be prepared according to the 'Rational template'.
- To establish a SAEL, data from toxicity studies with vertebrates are in general needed.

3.2.4 The **SAEL** Committee SHALL ASSESS the reliability of the proposed **SAEL** and discuss if the used methodology is appropriate in order to finalise the **SAEL** proposal.

3.3 Notification of proposed SAELs

3.3.1 The **SAEL** Committee SHALL INFORM formally the GBU(s) and industrial site(s) known for handling the substance, about the proposed **SAEL** value. The chairman WILL:

3.3.1.1 PREPARE a notification to signify its intention to publish a new **SAEL**

3.3.1.2 SEND a draft version of the notification to the GBU(s) concerned in order to get their final approval

Note 3.3.1 a

The draft notification is sent to the following contacts: GBU's industrial director, GBU's technology manager, HSE managers, industrial hygienists and product stewards.

3.3.1.3 then DISTRIBUTE the final version of the **SAEL** notification to the GBU(s) and sites concerned

Note 3.3.1 b

- The final SAEL notification is sent to: GBU's industrial director, GBU's technology managers, site managers, HSE managers, industrial hygienists, product stewards and occupational physicians.
- Copyholders of this document are: the SAEL Committee members, responsible toxicologist, HSE-PRAS-TERA unit manager, HSE director, HSE-PRAS manager, HSE-PRAS-Hazard Communication manager.

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3.4 Chemical risk assessment

- 3.4.1 Concerned GBU(s) and sites SHALL use the proposed **SAEL** for CONDUCTING a chemical risk assessment according to the procedure for Industrial Hygiene Group Requirements for Chemical Risk Assessment and Management (IND-HSE-IH-05-PRO).

Note 3.4.1

In most cases an analytical method to measure the substance in the workplace atmosphere should be developed to collect worker exposure data. If needed, a chemical risk exposure management should be done according to the same procedure.

3.5 SAEL adoption

- 3.5.1 As a final step to adopt the **SAEL**, the **SAEL** Committee SHALL INCLUDE the new **SAEL** in the “**SAEL** list” and INFORM the Substances and Raw Material Team lead.

Note 3.5.1

The SAEL list is updated several times per year and is available [HERE](#) or via the [HSE InDocs page dedicated to SAELs](#).

- 3.5.2 Within one month, the HazCom & EHS data management unit SHALL INCLUDE the new **SAEL** in the SAP EHS system.

Note 3.5.2

The new SAEL will be included in the Safety Data Sheets of all countries, according to the procedure on Safety Data Sheet Authoring, Revision and Distribution (IND-HSE-PRAS-19-PRO).

The toxicologist who calculated the SAEL value has to make a request via Salesforce to include the SAEL value in the Safety Data Sheets.

- 3.5.3 The sites and the GBUs will have a standard period of one year to comply with the new adopted SAEL. This standard period can be extended in specific cases.

3.6 Revision of SAELs

- 3.6.1 The **SAEL Committee** WILL INITIATE the revision of each existing **SAEL** when new data on adverse effects become available or every ten years.
For this purpose, they SHALL CONTACT the relevant GBU(s) and/or sites to assess if there is still a need to maintain the existing **SAEL**.

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Note 3.6.1

It should be assessed if the substance is still manufactured or used by Syensqo or its customers.

- 3.6.2** The responsible toxicologist WILL RE-EVALUATE the old **SAEL** value according to the requirements in 3.2.3, and WILL UPDATE the existing **SAEL** rationale accordingly.
- 3.6.3** Once the revised **SAEL** has been finalised, the **SAEL** Committee SHALL FOLLOW the same procedure as for new **SAELs**, described in sections 3.3 to 3.5.

3.7 Documentation

- 3.7.1** The **SAEL Committee** SHALL ARCHIVE all documents related to the **SAEL** activities in order to ensure the traceability of the decisions taken in the framework of **SAEL** setting or revision.

Note 3.7.1

The SAEL documents (minutes, rationales, notifications, etc.) are stored in a dedicated Shared drive.

4. Appendix

4.1 General information on OELs (Occupational Exposure Limits)

ACGIH TLVs

The **OELs** established by the American Conference of Governmental Industrial Hygienists (ACGIH) are called Threshold Limit Values (TLVs). To guarantee the same level of protection of all workers throughout the Group, the company has been committed since many years to comply with those TLV limits (IND-HSE-IH-05-PRO). Therefore ACGIH TLV values are included in the Syensqo Safety Data Sheet (SDS) for all countries of the world.

National OELs

In most countries, national Occupational Exposure Limits (**OELs**) have been adopted. However, certain national **OELs** may not be protective enough for workers. For example, the latest information on the hazards of the substances has not always been taken into account. In addition, certain countries may have national **OELs** which are very conservative. As a result, large differences between national **OEL** values may exist for certain substances. Syensqo must show compliance with a national **OEL** in the country where the national **OEL** is applicable. Therefore the national **OEL** is only included in the Syensqo Safety Data Sheet for the country where the national **OEL** is applicable. Although Syensqo must show compliance with the national **OEL**, the SAEL value must be applied unless the national OEL is stricter.

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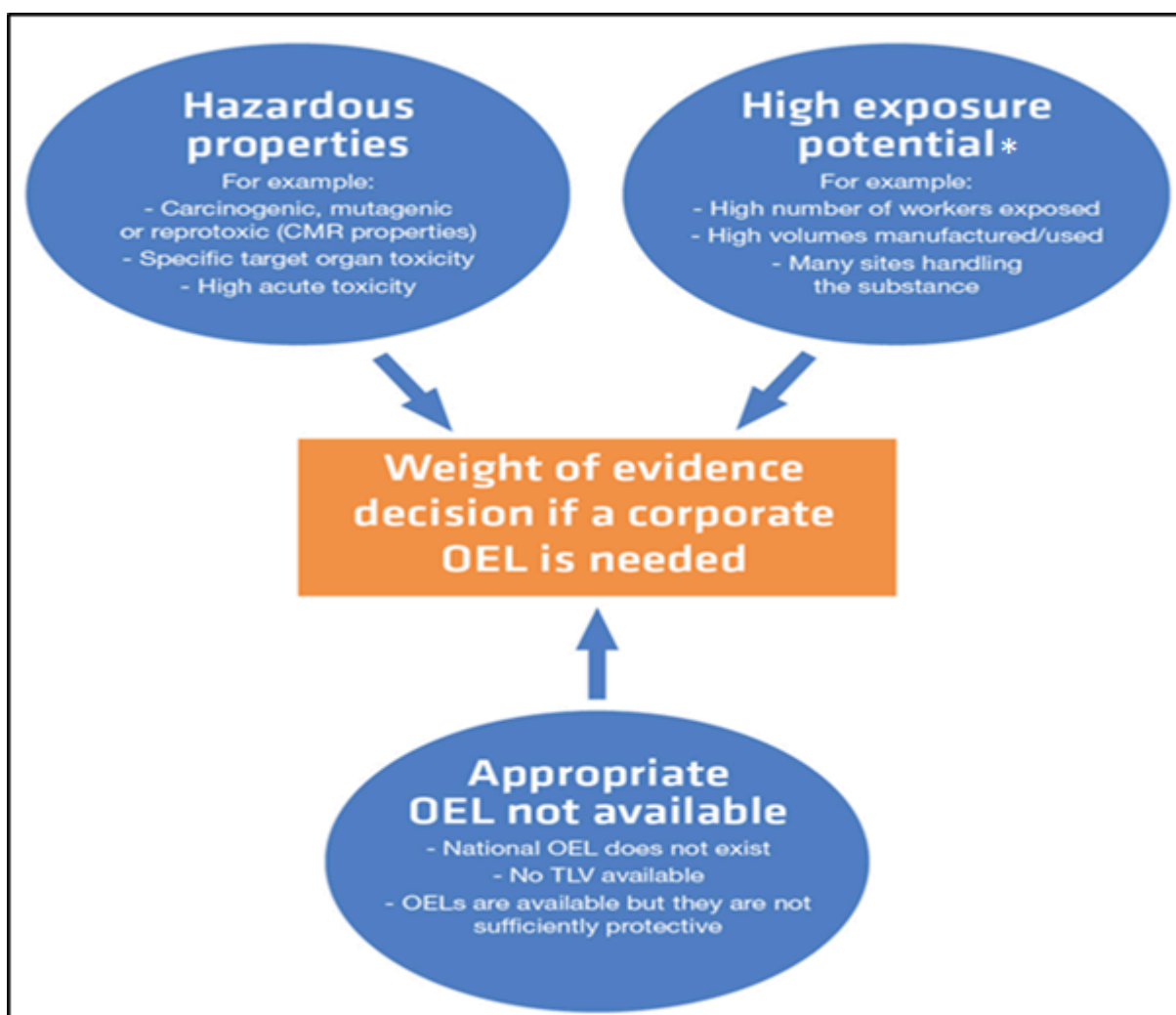
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Substances without OEL

For many other substances which can induce adverse effects, **OELs** may not be available due to a lack of data or due to a lack of resources within authorities to establish them. The majority of the substances manufactured by the chemical industry have no **OEL**. Internal values like SAEL values are calculated from non-public internal data and allow industries to fill the gap for some of their substances.

4.2 Selection criteria and prioritisation of substances



* Internal chemical risk assessment and management methods (IND-HSE-IH-05-PRO) to help ensure workers are protected.

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5. Revision history

Revision history			
Version	Page	Date	Revision history - Comments
V1.1	-	1 August 2019	Creation of document: the new procedure combines standard IND-HSE-PRAS-05-STA and procedure IND-HSE-PRAS-04-PRO (both have been withdrawn). It is a simplification which is in line with the new organisation.
V1.2		September 2024	Update of this procedure for Syensqo company.

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