



## **CEFIC ESCOMXML 1.0**

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# 1 ESCOMXML

## 1.1 Workflow

### 1.1.1 Extract XML file

To read back an XML file the process is a reversed variant of the XML file The most important difference affects the handling of the phrase catalog- if the catalog defined in the XML file is not available in the corresponding version the file can not be processed further. Besides this difference the operation is rather similar.

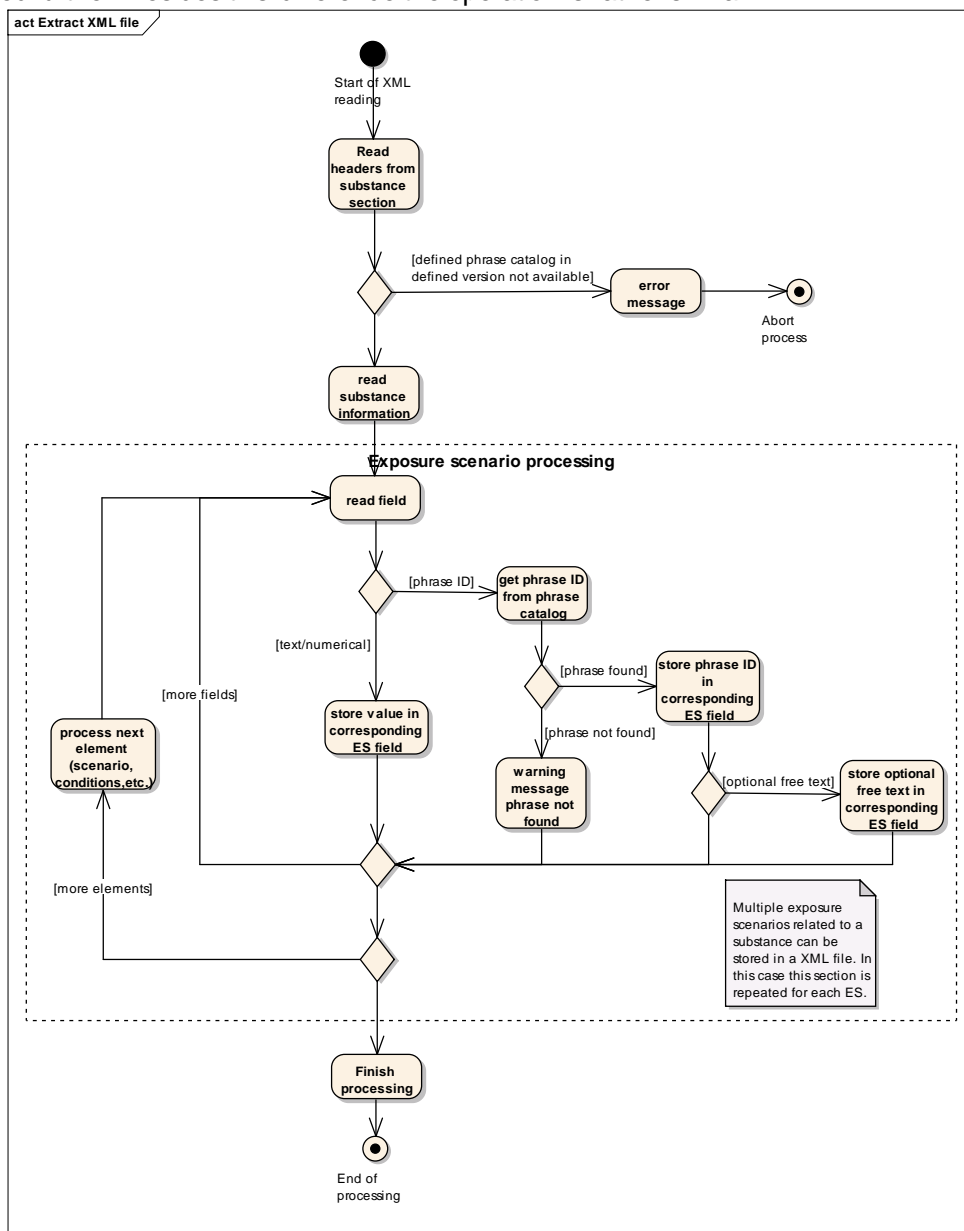


Figure 1: Extract XML file



### 1.1.1.1 Read headers from substance section

The substance element holds a few statements controlling the way text and phrases are handled inside the exposure scenario. These are the phrase catalog, its version and the language free text is stored in. This control information is read first and checked:

```
<PhraseCatalog>EUPHRAC</PhraseCatalog>  
<PhraseCatalogVersion>2010-08-31</PhraseCatalogVersion>  
<Language>en</Language>
```

### 1.1.1.2 read substance information

Basic substance information is extracted from the XML file and its content stored in the system's substance element properties:

```
<SubstanceMixtureName>1-2-3-Dimethyl-Hexa-Fluorene</SubstanceMixtureName>  
<PhysicalForm PhraseID="10133224414"/>  
<SubstanceMixtureIndicator>>false</SubstanceMixtureIndicator>  
<CASNumber>50-00-0</CASNumber>  
<ECNumber>200-001-8</ECNumber>  
<ProductCode>25254-9</ProductCode>
```

### 1.1.1.3 get phrase ID from phrase catalog

The phrase ID of a phrase is fetched from the target system and checked for existence. If a phrase could not be found the system takes appropriate actions like notifying the user and skipping the phrase field:

```
<ExposureFrequencyDuration PhraseID="10076084501" />
```

The phraseID is coming from the phrase catalog, in this example this is EUPHRAC:

*EuPhraC-Structure:* 03.04.01.06.1000

*EuPhraC-Unique:* 10076084501

*Original:*

*en:* Continuous use/release

### 1.1.1.4 store optional free text in corresponding ES field

A phrase can hold additional free text to describe further information. This is stored in the "FreeText" section of the phrase:

```
<ArticleCategory PhraseID="01.01.03.04.00.01.5000.1001" FreeText="Soft tissue"/>
```

The language used for the free text is defined from the substance language field:

```
<Language>en</Language>
```

## 1.1.2 Create XML file

XML file creation is a matter of creating an exposure scenario related to a certain substance. Header information is currently written in the substance information due to the lack of a specific root element.

Element fields from substance, exposure scenario, conditions of use, etc. are processed and written to the corresponding XML sections by considering phrase information (as phrase ID, not text). Additional free text is processed in the language defined in the header (in this case the language defined in the substance element).

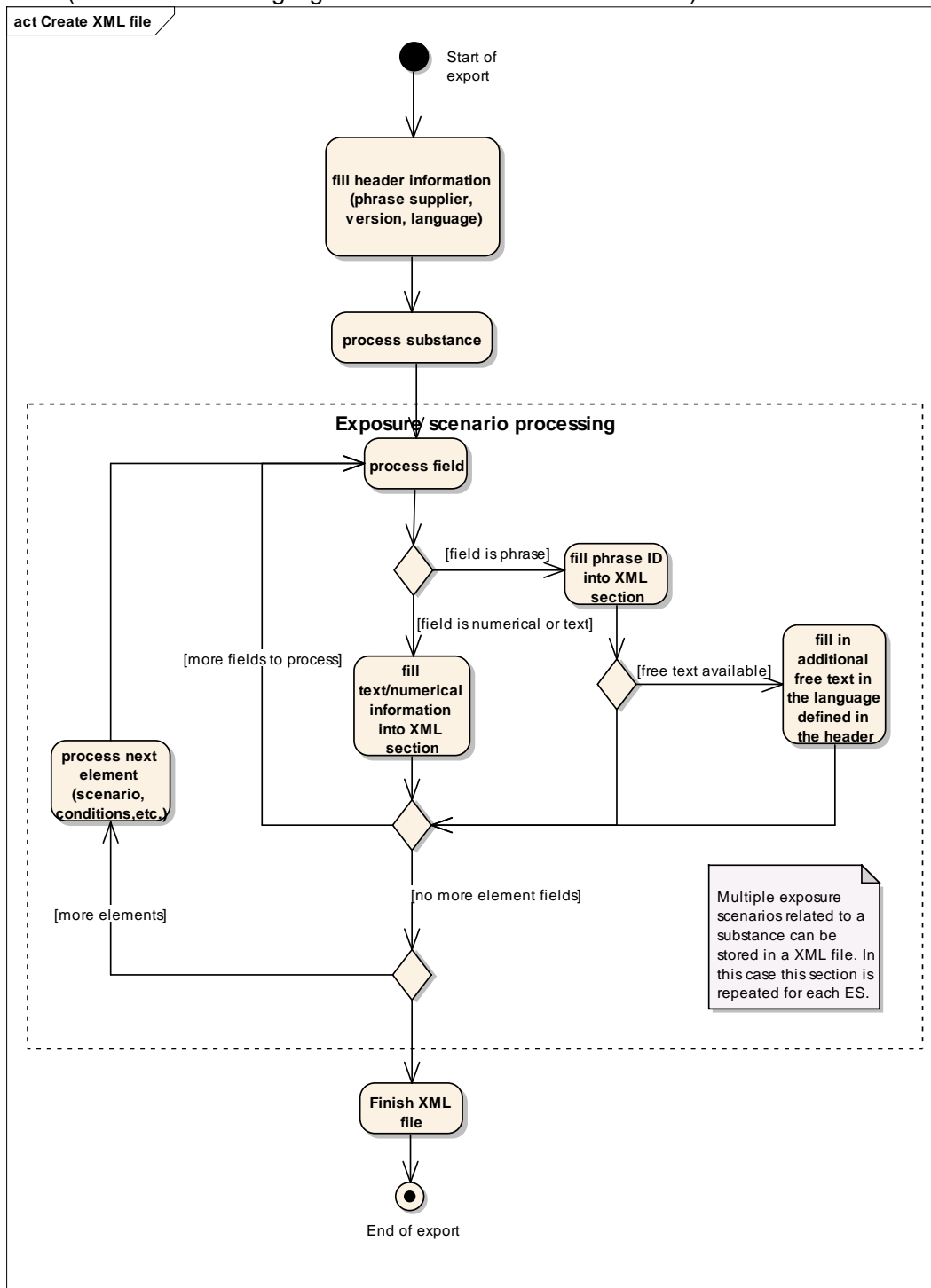


Figure 2: Create XML file

### 1.1.2.1 fill header information (phrase supplier, version, language)

Phrase catalog, its version and the language free text is stored in the substance as control information.

```
<PhraseCatalog>EUPHRAC</PhraseCatalog>  
<PhraseCatalogVersion>2010-08-31</PhraseCatalogVersion>  
<Language>en</Language>
```

### 1.1.2.2 process substance

Basic substance information related to the exposure scenario is stored in the corresponding XML sections:

```
<SubstanceMixtureName>1-2-3-Dimethyl-Hexa-Fluorene</SubstanceMixtureName>  
<PhysicalForm PhraseID="10133224414"/>  
<SubstanceMixtureIndicator>>false</SubstanceMixtureIndicator>  
<CASNumber>50-00-0</CASNumber>  
<ECNumber>200-001-8</ECNumber>  
<ProductCode>25254-9</ProductCode>
```

### 1.1.2.3 fill phrase ID into XML section

The phrase ID of a phrase used in the current field is written in the PhraseID section of the corresponding XML field:

```
<ExposureFrequencyDuration PhraseID="10076084501" />
```

The phraseID is coming from the phrase catalog, in this example this is EUPHRAC:

```
EuPhraC-Structure: 03.04.01.06.1000  
EuPhraC-Unique: 10076084501  
Original:  
en: Continuous use/release.
```

### 1.1.2.4 fill in additional free text in the language defined in the header

If a phrase based field holds additional free text to describe further information it is read from the XML section:

```
<ArticleCategory PhraseID="01.01.03.04.00.01.5000.1001" FreeText="Soft tissue"/>
```

The language used for the free text is defined from the substance language field in the XML:

```
<Language>en</Language>
```

## 1.2 ESCOMXML Model

### 1.2.1 ES for communication XML

The basic structure of the exposure scenario for communication is based on the Substance element as the root information. Each ES XML file is therefore based on one or more exposure scenarios related to a substance. An exposure scenario itself relates to contributing scenarios for worker/consumer (several) and environment (one only). The scenarios define the conditions of use and the risk management measures. Product characteristics related to contributing scenarios ensure that scenarios can be described per product characteristic. A guidance document per exposure scenario completes the information.

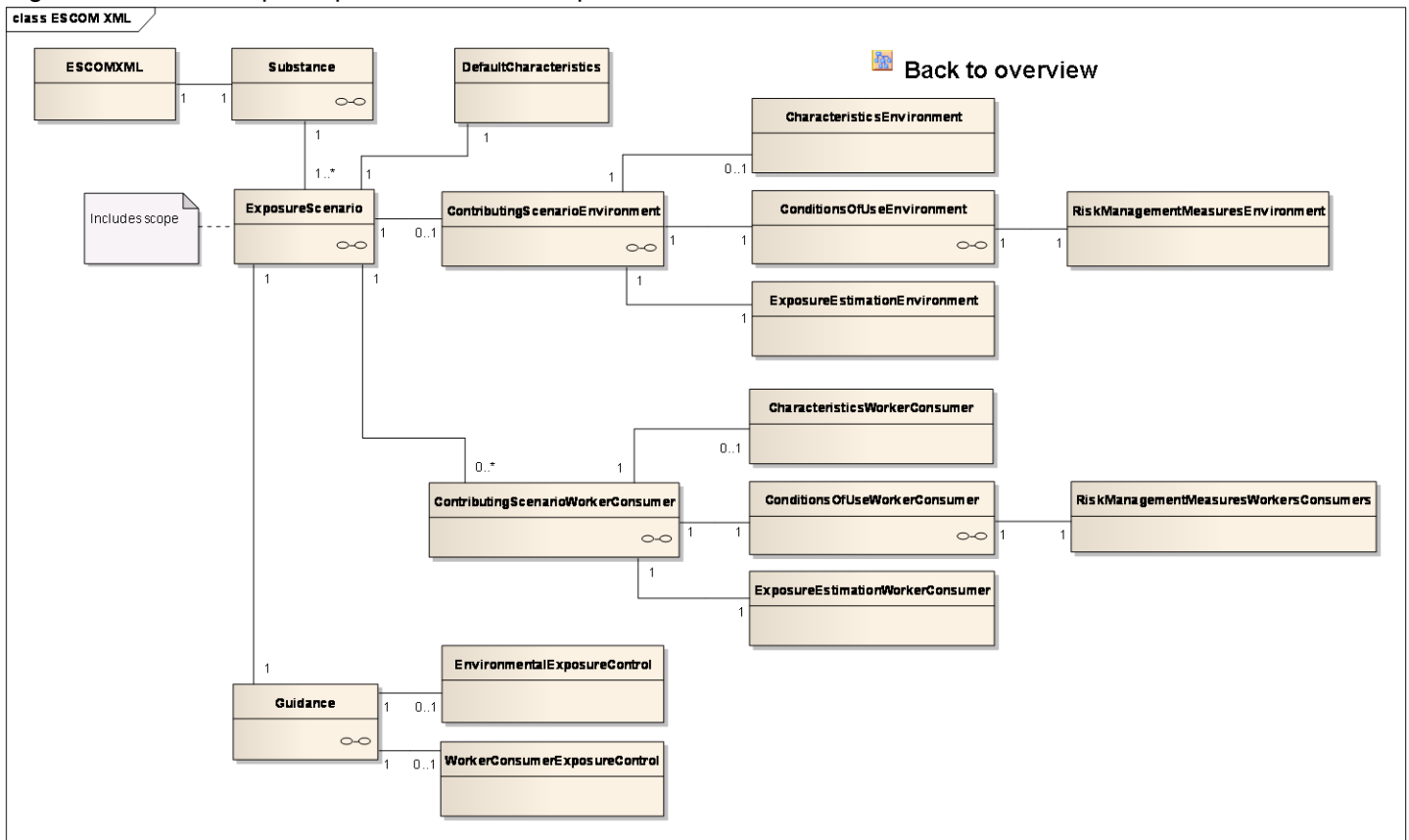


Figure 4: ESCOM XML

## 1.2.1.1 ESCOMXML

### 1.2.1.1.1 Substance

A substance object represents the root element of a exposure scenario.

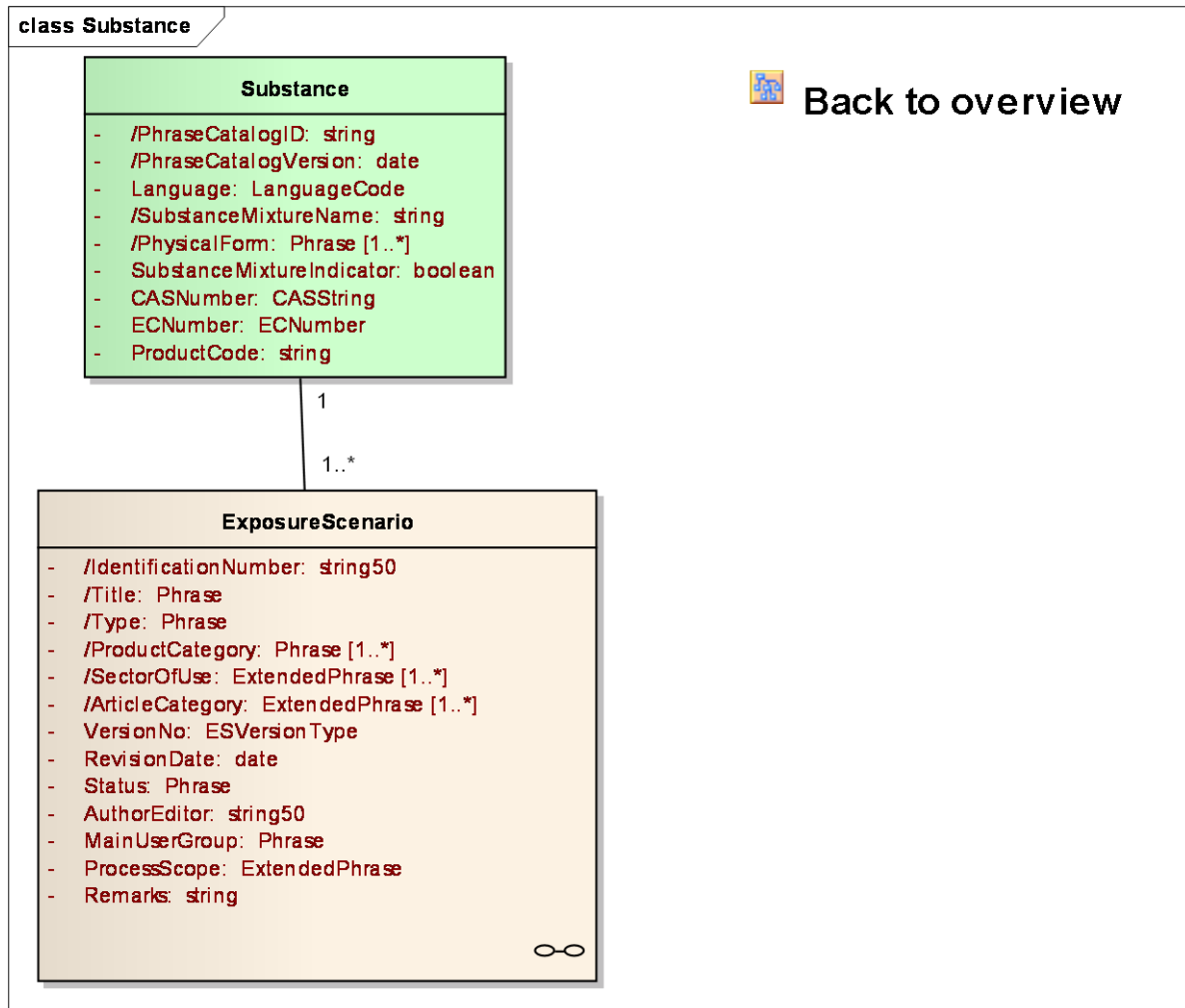


Figure 5: Substance

#### 1.2.1.1.1.1.1 PhraseCatalogID : string

Unique identifier of the phrase catalog used.

#### 1.2.1.1.1.1.2 PhraseCatalogVersion : date

The version timestamp of the phrase catalog the information is based on

#### 1.2.1.1.1.1.3 Language : LanguageCode

ISO 639-1 Language Code used in the freetext data fields of this XML set.

#### 1.2.1.1.1.1.4 SubstanceMixtureName : string



The name of the substance/mixture

#### 1.2.1.1.1.1.5 PhysicalForm : Phrase

The physical form as a phrase ID definition.

Eg. solid, liquid, etc.

#### 1.2.1.1.1.1.6 SubstanceMixtureIndicator : boolean

Identifies the type of the product:

false=substance

true=mixture

#### 1.2.1.1.1.1.7 CASNumber : CASString

The standard CAS number of a substance, eg. 436-55-1

#### 1.2.1.1.1.1.8 ECNumber : ECNumber

The standard EC number of a substance, eg. 332-555-21.

#### 1.2.1.1.1.1.9 ProductCode : string

The product code.

### 1.2.1.1.2 *CharacteristicsEnvironment*

Environmental characteristics define for which product characteristics a contributing scenario is relevant.

#### 1.2.1.1.2.1.1 VaporPressure : Phrase

Vapor pressure information encapsulated in a phrase element.

Example:

< 0.5 kPa at STP

0.5 - 10 kPa at STP

> 10 kPa at STP

#### 1.2.1.1.2.1.2 Dustiness : Phrase

Dustiness information encapsulated in a phrase element.

Example:

Solid, low dustiness

Solid, medium dustiness

Liquid, vapour pressure < 0.5 kPa at STP

Liquid, vapour pressure 0.5 - 10 kPa at STP

Liquid, vapour pressure > 10 kPa at STP

Solid, high dustiness

#### 1.2.1.1.2.1.3 MixtureArticleConcentration : Phrase

Information about mixture or article concentration. Unused in XSD schema version 1.0

#### 1.2.1.1.2.1.4 OtherMixtureArticleCharacteristics : Phrase

Information about other mixture or article characteristics. Unused in XSD schema version 1.0

### 1.2.1.1.3 **Characteristics Worker Consumer**

Worker/Consumer characteristics define for which product characteristics a contributing scenario is relevant.

#### 1.2.1.1.3.1.1 VaporPressure : Phrase

Vapor pressure information encapsulated in a phrase element.

Example:

< 0.5 kPa at STP

0.5 - 10 kPa at STP

> 10 kPa at STP

#### 1.2.1.1.3.1.2 Dustiness : Phrase

Dustiness information encapsulated in a phrase element.

Example:

Solid, low dustiness

Solid, medium dustiness

Liquid, vapour pressure < 0.5 kPa at STP

Liquid, vapour pressure 0.5 - 10 kPa at STP

Liquid, vapour pressure > 10 kPa at STP

Solid, high dustiness

#### 1.2.1.1.3.1.3 MixtureArticleConcentration : Phrase

Information about mixture or article concentration. Unused in XSD schema version 1.0

#### 1.2.1.1.3.1.4 OtherMixtureArticleCharacteristics : Phrase

Information about other mixture or article characteristics. Unused in XSD schema version 1.0

### 1.2.1.1.4 **DefaultCharacteristics**

The default characteristics if contributing scenario is missing the relevant product characteristics.

#### 1.2.1.1.4.1.1 VaporPressure : Phrase

Vapor pressure information encapsulated in a phrase element.

Example:

< 0.5 kPa at STP

0.5 - 10 kPa at STP

> 10 kPa at STP

#### 1.2.1.1.4.1.2 Dustiness : Phrase

Dustiness information encapsulated in a phrase element.

Example:

Solid, low dustiness

Solid, medium dustiness

Liquid, vapour pressure < 0.5 kPa at STP

Liquid, vapour pressure 0.5 - 10 kPa at STP

Liquid, vapour pressure > 10 kPa at STP

Solid, high dustiness

#### 1.2.1.1.4.1.3 MixtureArticleConcentration : Phrase

Information about mixture or article concentration. Unused in XSD schema version 1.0

### 1.2.1.1.4.1.4 OtherMixtureArticleCharacteristics : Phrase

Information about other mixture or article characteristics. Unused in XSD schema version 1.0

## 1.2.1.1.5 ExposureScenario

The exposure scenario element as an entry point to the scenario information. It describes the basic information valid for this exposure scenario. It eg. holds various mandatory fields, like identification number, a type, product category, the sector of use and the article category.

Most information is described from standard phrases and represented as phrase IDs.

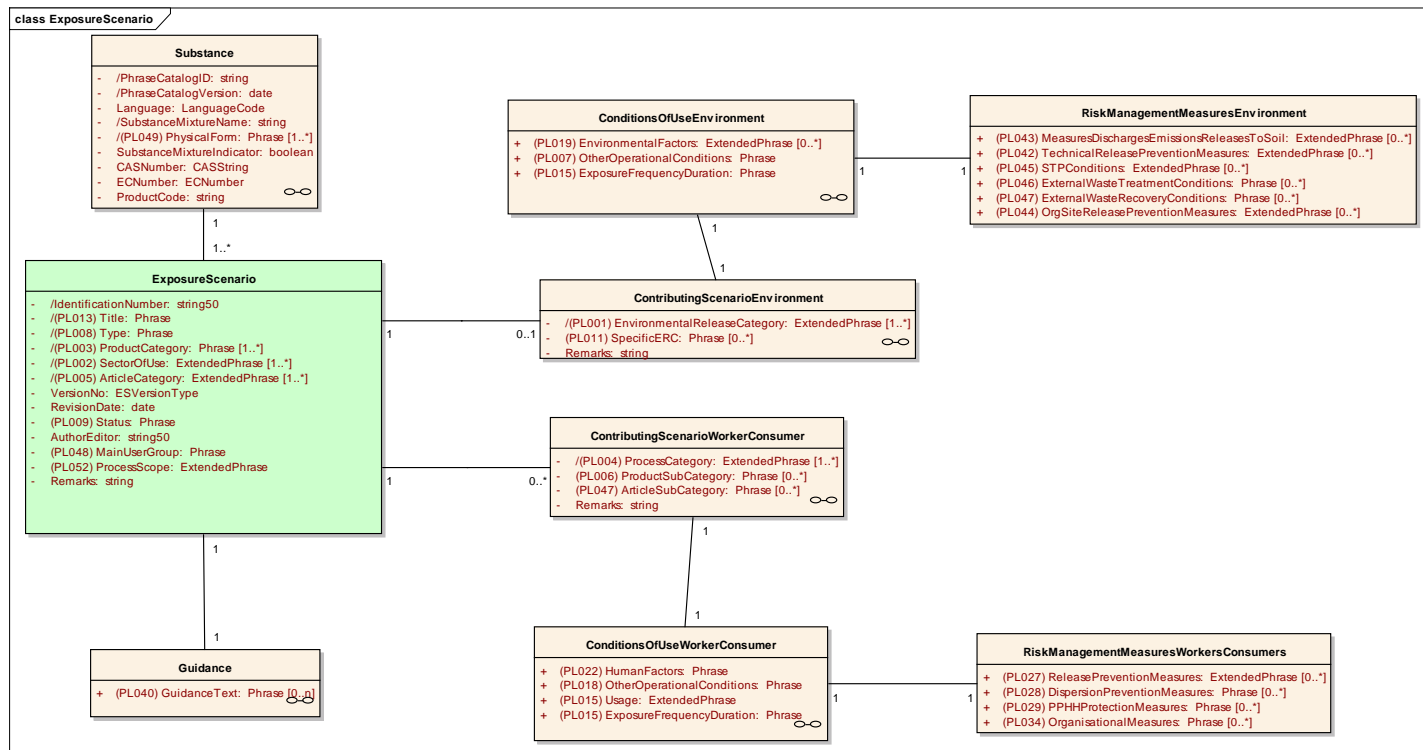


Figure 6: ExposureScenario

### 1.2.1.1.5.1.1 IdentificationNumber : string50

Exposure scenario identification number.

### 1.2.1.1.5.1.2 Title : Phrase

Titel of the ES as phrase information.

### 1.2.1.1.5.1.3 Type : Phrase

Type of the ES encapsulated in a phrase ID.

Examples:

W (Worker)

WA (Worker Article)

C (Consumer)

CA (Consumer Article)



#### 1.2.1.1.5.1.4 ProductCategory : Phrase

The product category information for this CS encapsulated as a phrase ID.

Example:

Adhesives, sealants

Adsorbent.

Air care products

Anti-freeze and de-icing products

Artists supply and hobby preparations

#### 1.2.1.1.5.1.5 SectorOfUse : ExtendedPhrase

Sector of use encapsulated as an extended phrase ID. An optional free text can be provided.

Example:

Agriculture, forestry, fishery

Manufacture of food products

Manufacture of textiles, leather, fur

Manufacture of pulp, paper and paper products

#### 1.2.1.1.5.1.6 ArticleCategory : ExtendedPhrase

Sector of use encapsulated as an extended phrase ID. An optional free text can be provided.

Example:

passenger cars and motor cycles

Leather articles

Metal articles

Rubber articles

Plastic articles

#### 1.2.1.1.5.1.7 VersionNo : ESVersionType

The version number of this exposure scenario.

Example:

03.45

#### 1.2.1.1.5.1.8 RevisionDate : date

The revision date of this ES in XML date format.

#### 1.2.1.1.5.1.9 Status : Phrase

ES status encapsulated as a phrase ID.

#### 1.2.1.1.5.1.10 AuthorEditor : string50

The author/editor of this ES.

#### 1.2.1.1.5.1.11 MainUserGroup : Phrase

The main user group encapsulated as an extended phrase ID.

Example:

Industrial

Professional

Consumer

#### 1.2.1.1.5.1.12 ProcessScope : ExtendedPhrase

The process scope encapsulated as an extended phrase ID. An optional free text can be provided.

#### 1.2.1.1.5.1.13 Remarks : string

Arbitrary remarks regarding this ES.

### 1.2.1.1.6 *ContributingScenarioWorkerConsumer*

The contributing scenario for workers and consumers.

#### 1.2.1.1.6.1.1 ProcessCategory : ExtendedPhrase

The process category information for this CS encapsulated as an extended phrase ID. Additional free text can be provided.

Example:

Use in closed process, no likelihood of exposure  
Use in closed, continuous process with occasional controlled exposure  
Use in closed batch process (synthesis or formulation)  
Use in batch and other process (synthesis) where opportunity for exposure arises  
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)  
Calendering operations  
Industrial spraying  
Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities

#### 1.2.1.1.6.1.2 ProductSubCategory : Phrase

The product sub category information for this CS encapsulated as a phrase ID.

Example:

Glues, hobby use  
Glues DIY-use (carpet glue, tile glue, wood parquet glue)  
Sealants  
Air care, instant action (aerosol sprays)  
Air care, continuous action (solid and liquid)

#### 1.2.1.1.6.1.3 ArticleSubCategory : Phrase

The article sub category information for this CS encapsulated as a phrase ID.

Not used in XSD version 1.0

#### 1.2.1.1.6.1.4 Remarks : string

Arbitrary remarks regarding this CS.

### 1.2.1.1.7 ContributingScenarioEnvironment

The contributing scenario for environment.

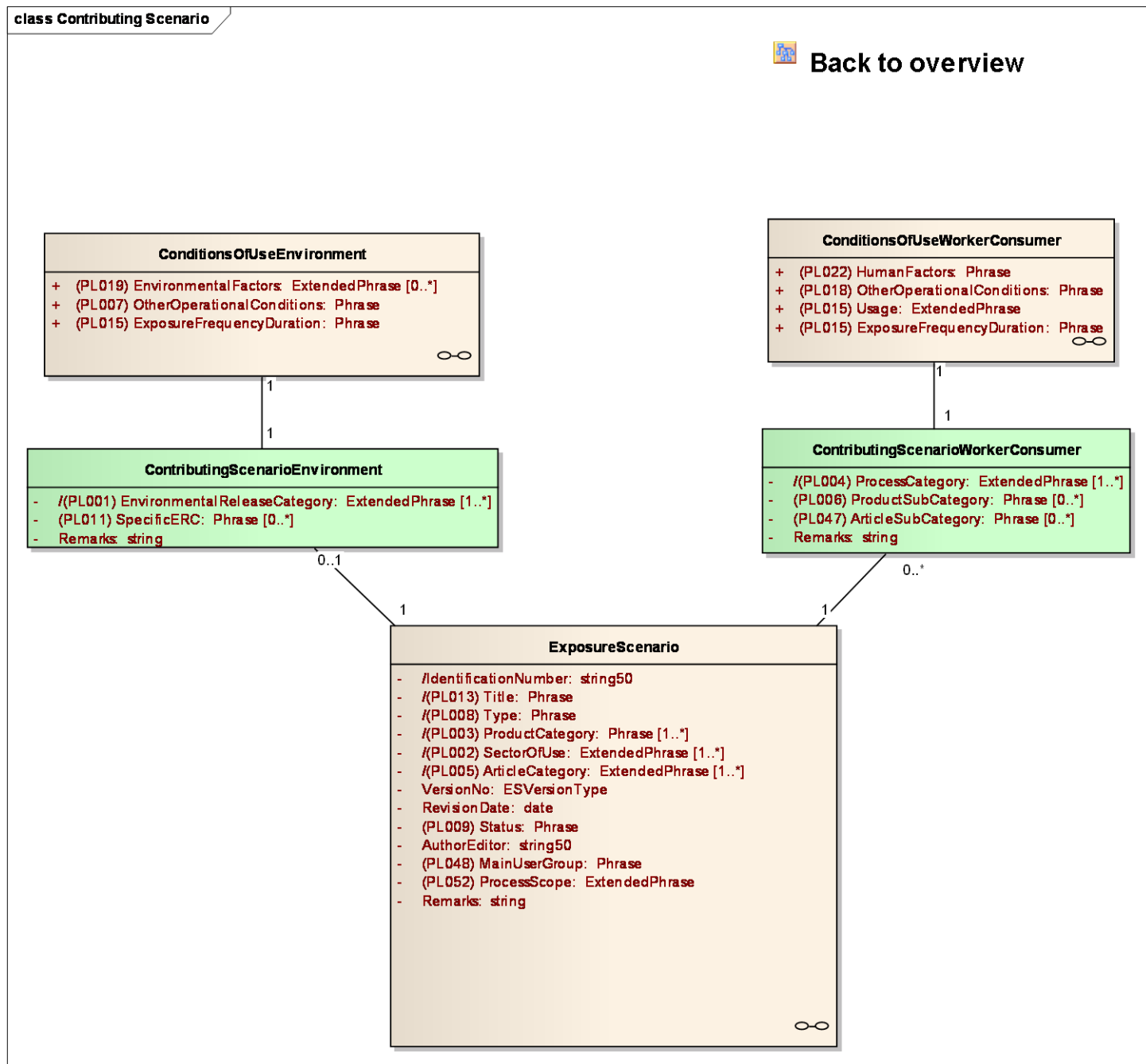


Figure 7: Contributing Scenario

#### 1.2.1.1.7.1.1 EnvironmentalReleaseCategory : ExtendedPhrase

Environmental Release Category encapsulated as a phrase ID.

Example:  
Manufacture of substances

Formulation in materials  
Industrial use resulting in inclusion into or onto a matrix  
Wide dispersive indoor use of processing aids in open systems

#### 1.2.1.1.7.1.2 SpecificERC : Phrase

The specific ERC information for this CS encapsulated as a phrase ID.

#### 1.2.1.1.7.1.3 Remarks : string

Arbitrary remarks regarding this CS.

### 1.2.1.1.8 *ConditionsOfUseEnvironment*

Conditions of use for environmental considerations.

#### 1.2.1.1.8.1.1 EnvironmentalFactors : ExtendedPhrase

Environmental factors information for these environmental conditions of use encapsulated as an extended phrase ID.  
An optional free text can be provided.

Example:

Local freshwater dilution factor:

Local marine water dilution factor:

Receiving surface water flow is 18000 m<sup>3</sup>/d.

#### 1.2.1.1.8.1.2 OtherOperationalConditions : Phrase

Other Operational Conditions of use affecting environmental exposure encapsulated as a phrase ID.

Example:

Solid, low dustiness.

Solid, medium dustiness.

Liquid, vapour pressure < 0.5 kPa at STP.

Liquid, vapour pressure 0.5 - 10 kPa at STP.

Liquid, vapour pressure > 10 kPa at STP.

Solid, high dustiness.

Operation is carried out at elevated temperature (> 20°C above ambient temperature).

#### 1.2.1.1.8.1.3 ExposureFrequencyDuration : Phrase

Exposure frequency and duration encapsulated in a phrase ID.

Example:

Intermittent release.

Continuous release.

Dispersive use.

Emission Days (days/year):

### 1.2.1.1.9 ConditionsOfUseWorkerConsumer

Conditions of use for worker and consumer considerations.

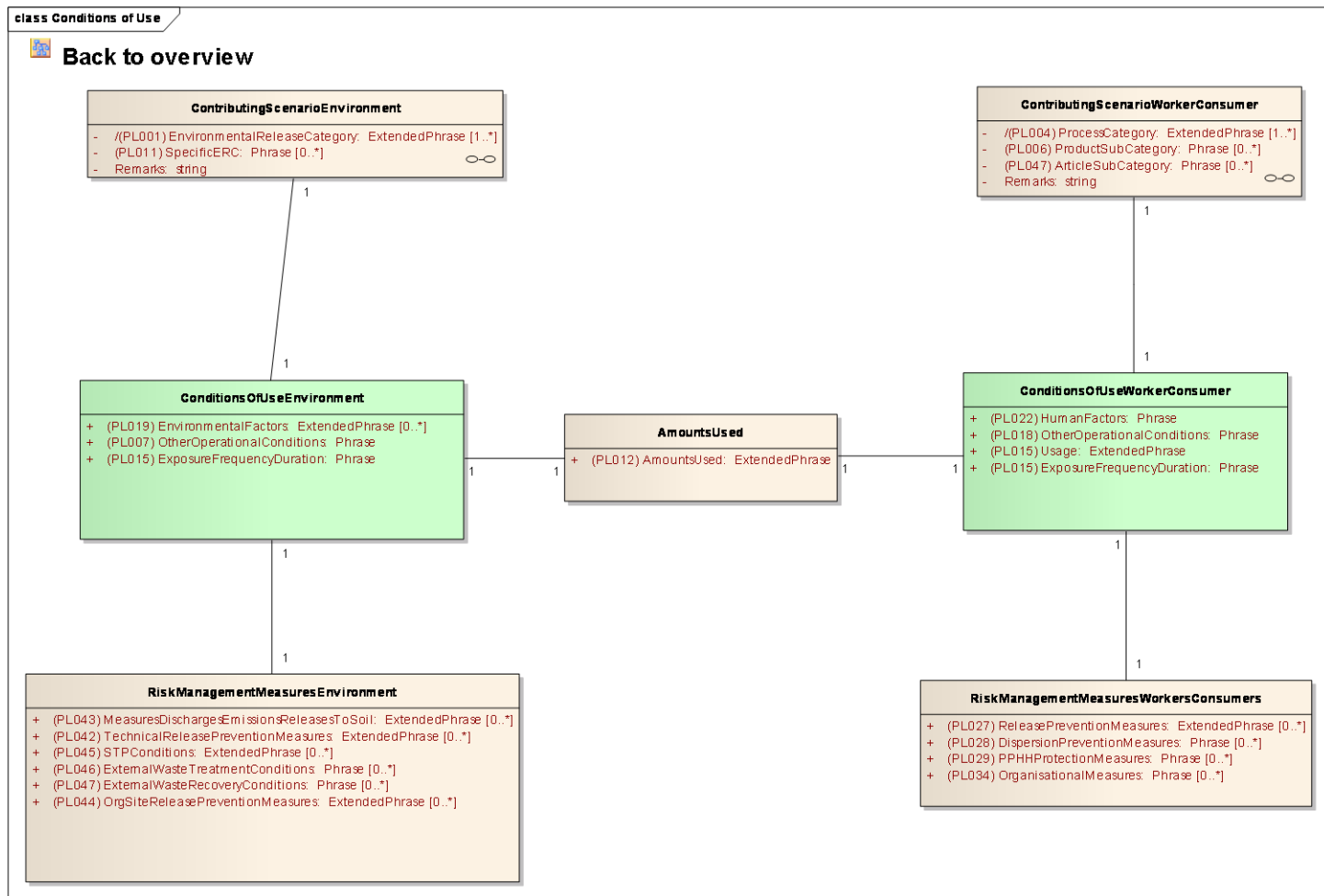


Figure 8: Conditions of Use

#### 1.2.1.1.9.1.1 HumanFactors : Phrase

Human factors information encapsulated as a phrase ID.

#### 1.2.1.1.9.1.2 OtherOperationalConditions : Phrase

Other Operational Conditions of use affecting worker/consumer exposure encapsulated as a phrase ID.

Example:

Solid, low dustiness.

Solid, medium dustiness.

Liquid, vapour pressure < 0.5 kPa at STP.

Liquid, vapour pressure 0.5 - 10 kPa at STP.

Liquid, vapour pressure > 10 kPa at STP.

Solid, high dustiness.

Operation is carried out at elevated temperature (> 20°C above ambient temperature).



#### 1.2.1.1.9.1.3 Usage : ExtendedPhrase

Usage information encapsulated as an extended phrase ID. An optional free text can be provided.

#### 1.2.1.1.9.1.4 ExposureFrequencyDuration : Phrase

Exposure frequency and duration encapsulated in a phrase ID.

Example:

Intermittent release.  
Continuous release.  
Dispersive use.

Emission Days (days/year):

#### 1.2.1.1.10 AmountsUsed

A general amounts used element all osrts of conditions of use.

#### 1.2.1.1.10.1.1 AmountsUsed : ExtendedPhrase

Amounts used information encapsulated as an extended phrase ID. An optional free text can be provided.

Example:

Fraction of EU tonnage used in region:  
Regional use tonnage (tonnes/year):  
Fraction of Regional tonnage used locally:  
Maximum daily site tonnage (kg/day):

#### 1.2.1.1.11 ExposureEstimationEnvironment

Exposure estimation for environmental considerations.

#### 1.2.1.1.11.1.1 HealthExposureEstimationEnvironmental : ExtendedPhrase

Health exposure information encapsulated as an extended phrase ID. An optional free text can be provided.

Example:

Human exposure prediction (inhalation)  
Industrial use  
Professional use  
Consumer use

#### 1.2.1.1.12 ExposureEstimationWorkerConsumer

Exposure estimation for worker/consumer considerations.

#### 1.2.1.1.12.1.1 HealthExposureEstimationWorkerConsumer : ExtendedPhrase

Health exposure information encapsulated as an extended phrase ID. An optional free text can be provided.

Example:

Human exposure prediction (inhalation)  
Industrial use

Professional use

Consumer use

### **1.2.1.1.13 Risk Management Measures Workers Consumers**

Risk Management Measures for worker/consumer considerations.

#### **1.2.1.1.13.1.1 Release Prevention Measures : Extended Phrase**

Control of Worker Exposure and risk management measures to prevent release encapsulated as a phrase ID.

Example:

Handle substance within a closed system

Provide extract ventilation to points where emissions occur

Carry out in a vented booth

Minimise exposure by enclosing the operation and equipment and provide extract ventilation at openings

Ensure material transfers are under containment or extract ventilation

Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20

Ensure transfer points are supplied with extract ventilation

#### **1.2.1.1.13.1.2 Dispersion Prevention Measures : Phrase**

Prevent dispersion encapsulated as a phrase ID.

#### **1.2.1.1.13.1.3 PPHH Protection Measures : Phrase**

Conditions and measures related to personal protection, hygiene and health evaluation encapsulated as a phrase ID.

#### **1.2.1.1.13.1.4 Organisational Measures : Phrase**

Organisational measure information encapsulated in a phrase ID.

Example

Do not apply industrial sludge to natural soils.

Sludge should be incinerated, contained or reclaimed.

Prevent environmental discharge consistent with regulatory requirements.

### **1.2.1.1.14 Risk Management Measures Environment**

Risk Management Measures for environmental considerations.

#### **1.2.1.1.14.1.1 Measures Discharges Emissions Releases To Soil : Extended Phrase**

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil encapsulated in an extended phrase ID. An optional free text can be provided.

Example:

On-site waste water treatment

Size of industrial sewage treatment plant (m<sup>3</sup>/d)

Degradation effectiveness

Sludge treatment technique

#### **1.2.1.1.14.1.2 Technical Release Prevention Measures : Extended Phrase**

Technical measures to prevent release encapsulated in an extended phrase ID. An optional free text can be provided.

#### 1.2.1.1.14.1.3 STPConditions : ExtendedPhrase

Conditions and measures related to municipal sewage treatment plant encapsulated in an extended phrase ID. An optional free text can be provided.

Example:

Size of municipal sewage system/ treatment plant (m<sup>3</sup>/d)

Sludge treatment technique

Dispose off sludge.

Recover sludge.

Measures to limit air emissions

#### 1.2.1.1.14.1.4 ExternalWasteTreatmentConditions : Phrase

Conditions and measures related to external treatment of waste for disposal encapsulated in a phrase ID.

Example:

Fraction of used amount transferred to external waste treatment

Suitable waste treatment

Hazardous waste incineration.

Chemical-physical treatment.

Chemical oxidation.

Treatment effectiveness

#### 1.2.1.1.14.1.5 ExternalWasteRecoveryConditions : Phrase

Conditions and measures related to external recovery of waste encapsulated in a phrase ID.

Example:

External recovery and recycling of waste should comply with applicable local and/or national regulations.

During manufacturing no waste of the substance is generated.

This substance is consumed during use and no waste of the substance is generated.

#### 1.2.1.1.14.1.6 OrgSiteReleasePreventionMeasures : ExtendedPhrase

Organisational measures to prevent/limit release from site encapsulated in an extended phrase ID. An optional free text can be provided.

### 1.2.1.1.15 Guidance

The guidance element.

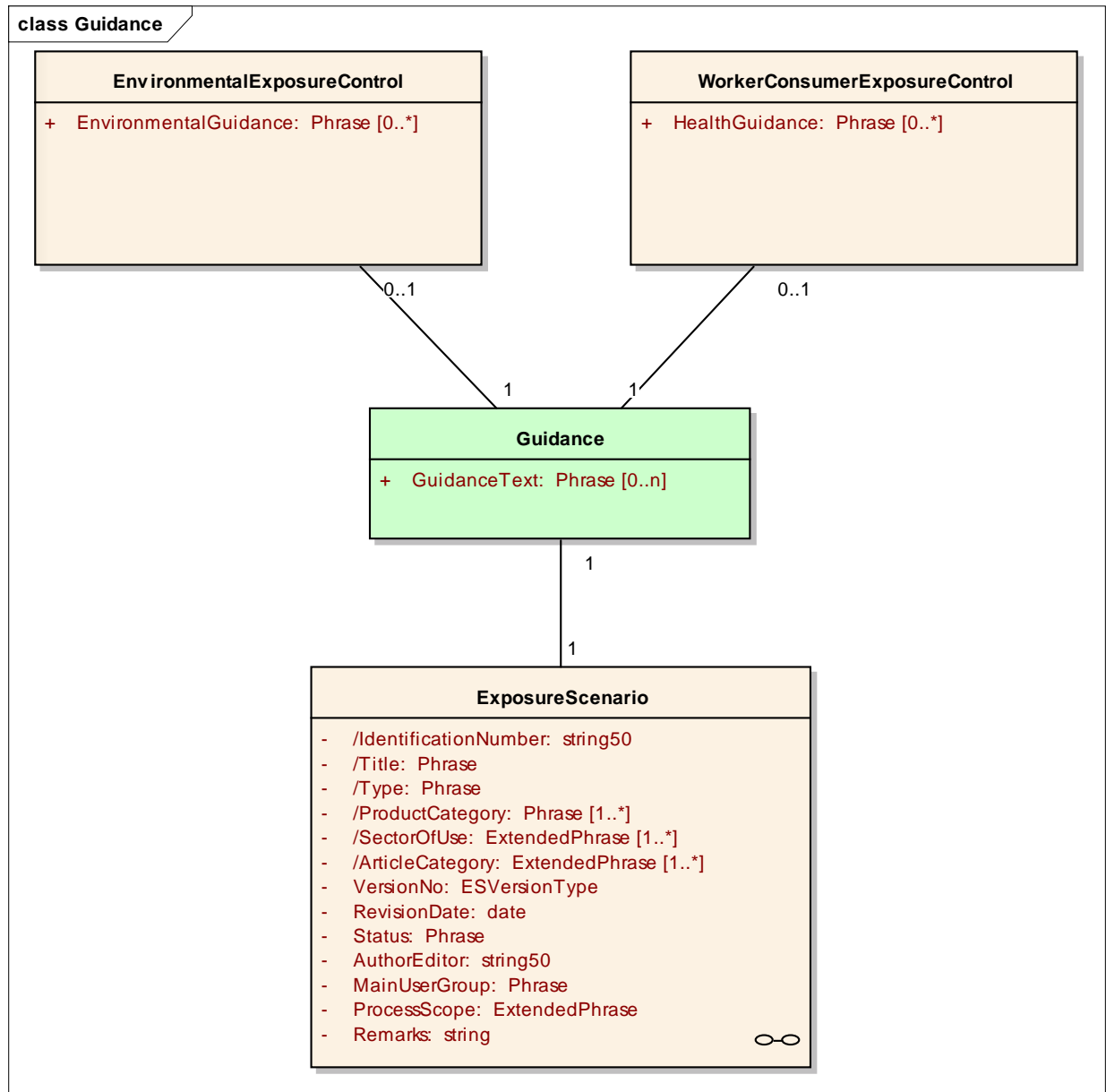


Figure 9: Guidance

#### 1.2.1.1.15.1.1 GuidanceText : Phrase

The guidance text information encapsulated in a phrase ID.

### **1.2.1.1.16 EnvironmentalExposureControl**

Exposure control for environmental considerations as part of the guidance element.

#### **1.2.1.1.16.1.1 EnvironmentalGuidance : Phrase**

Guidance for environment encapsulated in a phrase ID.

### **1.2.1.1.17 WorkerConsumerExposureControl**

Exposure control for worker/consumer considerations as part of the guidance element.

#### **1.2.1.1.17.1.1 HealthGuidance : Phrase**

Guidance for health (worker/consumer) encapsulated in a phrase ID.

## 1.2.1.2 ESCOMXML basic data types

### 1.2.1.2.1 *CASString*

The CAS identification string for a substance.

### 1.2.1.2.2 *ECNumber*

The EC number identification string for a substance.

### 1.2.1.2.3 *ESVersionType*

Data type describe an exposure scenario version.

### 1.2.1.2.4 *Phrase*

A phrase represented by a phrase ID.

#### 1.2.1.2.4.1.1 *PhraseID* : xs:string

The unique phrase ID from a phrase catalogue.

### 1.2.1.2.5 *ExtendedPhrase*

An extended phrase is a phrase type consisting of additional free text besides the phrase ID.

#### 1.2.1.2.5.1.1 *PhraseID* : xs:string

The unique phrase ID from a phrase catalogue.

#### 1.2.1.2.5.1.2 *FreeText* : string

The free text part of the extended phrase.

### 1.2.1.2.6 *string10*

A string of length 10 characters.

### 1.2.1.2.7 *string50*

A string of length 50 characters.

### 1.2.1.2.8 *LanguageCode*

The language code of the country used to describe textual information.