ENVIRONMENTAL DATA SHEET

ANIMAL HEALTH

PRODUCT ECO DESIGNED

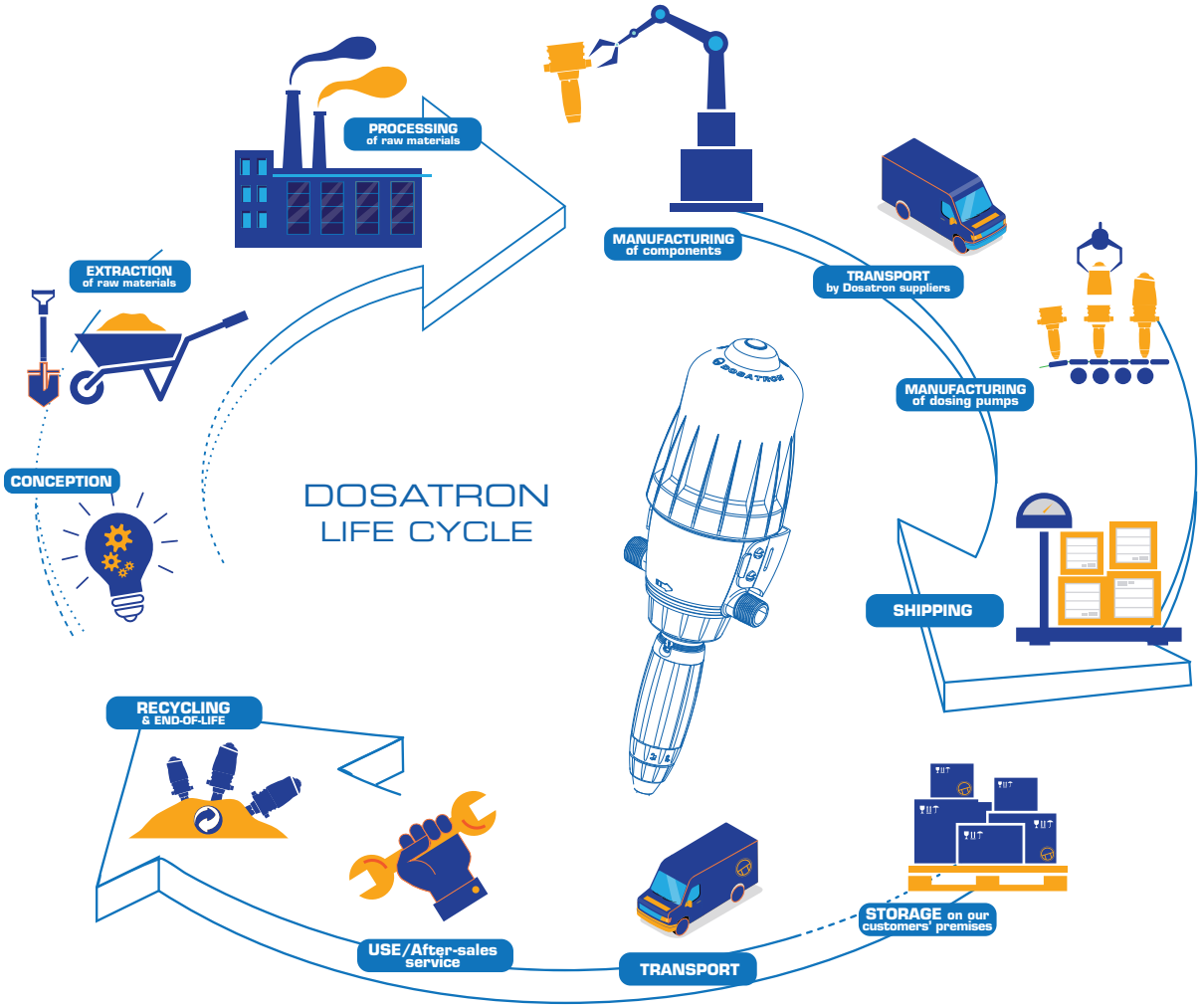
D6AL Generation

This product life cycle assessment was conducted in collaboration with APESA (Association for the environment and safety in the Aquitaine region). Compliant with the APESA standard in accordance with the ISO 14041 standard

APESA

Presentation: What is life cycle assessment?

Life Cycle Assessment **(LCA)** is an environmental evaluation method used to quantify the impacts of a system (including consumer goods, services, and processes) over its entire life cycle, from extraction of the raw materials comprising it, to its end-of-life disposal, as well as the distribution and use phases.



Scope of the study

The data is from the DOSATRON nomenclature and was modelled using **Simapro V9.5** and **Ecoinvent v9.3**.

All components representing more than 0.5% of the mass of the dosing pump were taken into account based on gross mass

Manufacturing of components is representative of supplier processes and countries where they operate.

The pump's end of life is representative of an average end of life in Europe, i.e. **50% incineration and 50% landfill.**

RAW MATERIALS → PROCUREMENT → MANUFACTURING → MAINTENANCE → END OF LIFE

Procurement is representative of
- DOSATRON supplier distance.

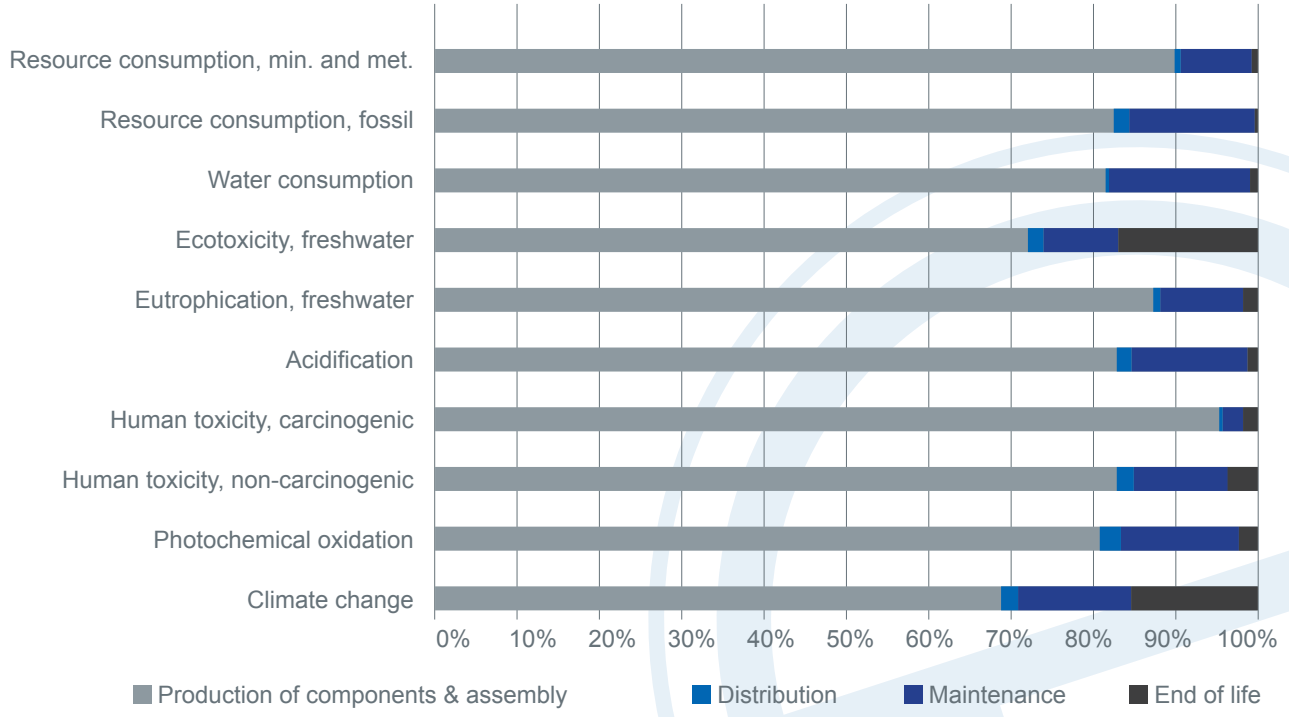
The reference life span is 8 years
Dosing pump maintenance is representative of replacement of wearing parts such as replacement of the motor every 2 years and replacement of the housing every 4 years..

Expression of results for the declared product

Table 1: D6 (2%) dosing pump life cycle impact results

Impact category	Unit	Total: D6 dosing pump	Production of components & assembly	Distribution	Maintenance	End of life
Climate change	kg CO_2 eq	4,38E+01	3,01E+01	8,63E-01	6,06E+00	6,81E+00
Photochemical oxidation	kg NMVOC eq	1,03E-01	8,34E-02	2,63E-03	1,49E-02	2,49E-03
Human toxicity, non-carcinogenic	CTUh	5,45E-07	4,51E-07	1,14E-08	6,20E-08	2,08E-08
Human toxicity, carcinogenic	CTUh	7,69E-08	7,32E-08	2,72E-10	1,96E-09	1,46E-09
Acidification	H^+ eq	1,53E-01	1,27E-01	2,75E-03	2,15E-02	2,22E-03
Eutrophication, freshwater	kg P eq	6,39E-03	5,57E-03	5,53E-05	6,42E-04	1,24E-04
Ecotoxicity, freshwater	CTUe	5,56E+02	4,00E+02	1,10E+01	5,01E+01	9,51E+01
Water consumption	m^3 depriv.	1,76E+01	1,43E+01	5,04E-02	3,04E+00	1,94E-01
Resource consumption, fossil	MJ	7,49E+02	6,17E+02	1,40E+01	1,14E+02	3,45E+00
Resource consumption, min. and met.	kg Sb eq	2,68E-04	2,41E-04	1,91E-06	2,30E-05	2,46E-06

Figure 2: breakdown of D6 (2%) dosing pump environmental impacts



Expression of results for the functional unit

The functional unit is the service rendered by the D6 (2%) dosing pump:
"Gravity-based processing of 1m³ of water"

Impact category	Unit	Total : Doseur D6	Production of components & assembly	Distribution	Maintenance	End of life
Climate change	kg CO_2 eq	2,08E-04	1,43E-04	4,10E-06	2,88E-05	3,24E-05
Photochemical oxidation	kg NMVOC eq	4,92E-07	3,97E-07	1,25E-08	7,08E-08	1,19E-08
Human toxicity, non-carcinogenic	CTUh	2,59E-12	2,14E-12	5,43E-14	2,95E-13	9,91E-14
Human toxicity, carcinogenic	CTUh	3,66E-13	3,48E-13	1,29E-15	9,33E-15	6,95E-15
Acidification	H^+ eq	7,28E-07	6,02E-07	1,31E-15	1,02E-07	1,06E-08
Eutrophication, freshwater	kg P eq	3,04E-08	2,65E-08	2,63E-10	3,05E-09	5,89E-10
Ecotoxicity, freshwater	CTUe	2,64E-03	1,90E-03	5,21E-05	2,38E-04	4,52E-04
Water consumption	m^3 depriv.	8,37E-05	6,81E-05	2,40E-07	1,45E-05	9,21E-07
Resource consumption, fossil	MJ	3,56E-03	2,94E-03	6,66E-05	5,44E-04	1,64E-05
Resource consumption, min. and met.	kg Sb eq	1,28E-09	1,15E-09	9,08E-12	1,09E-10	1,17E-11

Presentation of indicator categories

- **Climate change (kg CO_2 eq.):** Expresses potential participation in climate change of the system being studied.

- **Photochemical oxidation (kg NMVOC eq.):** This is the formation of photochemical ozone. Though ozone is a protective gas in the stratosphere at an altitude of approx. 35 km (see ozone layer depletion), it is a dangerous gas (respiratory irritant) in the lower layers of the atmosphere (troposphere, altitude < 11 km) where we live and breathe. Therefore, this indicator is used to evaluate the contribution of emissions in the air of compounds liable to participate in the formation of tropospheric ozone.

- **Human toxicity, carcinogenic effects, and non-carcinogenic effects:** these indicators evaluate potential impacts of toxicity on human health caused by emissions of polluting substances (heavy metals, various chemicals, carcinogenic or otherwise).

- **Acidification (H+ eq.):** Some compounds emitted in the atmosphere (particularly sulphur dioxide (SO_2) and nitrogen oxides (NO_x) are liable to be oxidised and converted into acids (sulphuric acid, nitric acid) that are then leached by precipitation (acid rain) and found in runoff and surface water.

- **Freshwater eutrophication (kg P eq.):** Expresses potential participation in the phenomenon of freshwater eutrophication, which results in asphyxia of aquatic environments in favour of overdevelopment of algae.

- **Freshwater ecotoxicity:** indicates potential toxicity introduced to aquatic environments (surface freshwater) by emission in the environment of toxic substances. Ecotoxicity destabilises and threatens the quality and variety of ecosystems (fauna and flora).

- **Exhaustion of water resources:** this indicator evaluates shortage of freshwater, i.e. the quantity of water used adjusted to scarcity.

- **Exhaustion of mineral, fossil, and renewable resources:** This impact category takes account of energy and non-energy resource consumption (except for water) by weighting every resources with a coefficient corresponding to a scarcity index (antimony (Sb) has a value of 1 by convention). A value exceeding 1 for a resource indicates that a resource scarcer than antimony is being consumed.