

**SODIUM HYPOCHLORITE, 5%<=C<16%****1. PRODUCT AND COMPANY IDENTIFICATION****1.1. Product Identifiers**

-Product Name	:	<b>SODIUM HYPOCHLORITE, 5% &lt;= C &lt; 16%</b>
-Chemical Characterization	:	Stabilized product
-Synonyms	:	Hypochlorous acid, sodium salt, Javel extract
-Molecular Formula	:	NaClO
-REACH Registration Number	:	01-2119488154-34-0047
-Type of Product	:	Reaction mass

**1.2. Identified uses / Uses advised against**

<b>-Identified uses</b>	:	- Bleaching agent, Oxidizing agents, Reagent, Disinfectant, Cleaning agent
		- Water treatment agent

<b>-Uses advised against</b>	:	- None identified
------------------------------	---	-------------------

**1.3. Manufacturer or supplier's details**

-Company	:	MICRO-BIO (IRELAND) LTD
-Address	:	Industrial Estate, Fermoy, Co Cork, Ireland
-Telephone	:	+3532531388
-Fax	:	+3532532458
-E-mail address	:	<a href="mailto:dobrien@micro-bio.ie">dobrien@micro-bio.ie</a>

**1.4. Emergency telephone number**

-Emergency telephone number	:	+3532531388 (Available 24/7)
-----------------------------	---	------------------------------

**2. HAZARDS IDENTIFICATION****2.1. GHS Classification****2.1.1. European regulation (EC) 1272/2008, as amended**

Classified as hazardous according to the European regulation (EC) 1272/2008, as amended

Hazard class	Hazard category	Route of exposure	H Phrases
Corrosive to metals	Category 1		H290
Skin corrosion	Category 1B	Dermal	H314
Serious eye damage	Category 1		H318
Target Organ Systemic Toxicant – Single exposure	Category 3	Inhalation	H335
Acute aquatic toxicity	Category 1		H400

**2.1.2. European Directive 67/548/EEC or 1999/45/EC, as amended**

Hazard class / Hazard category	R-phrase(s)
C	R34
Xi	R37
N	R50
	R31

**2.2. EC Label – According to Regulation (EC) 1272/2008, as amended****2.2.1. Name(s) on label**

Hazardous components	:	Sodium hypochlorite (>= 5 -< 16%)
----------------------	---	-----------------------------------

**2.2.2. Signal word**

Danger

**2.2.3. Hazard symbols****2.2.4. Hazard statements**

H290	-	May be corrosive to metals.
H314	-	Causes severe skin burns and eye damage.
H318	-	Causes serious eye damage.
H335	-	May cause respiratory irritation.
H400	-	Very toxic to aquatic life.
EUH031	-	Contact with acids liberates toxic gas



2.2.5. Precautionary statements

<b>Prevention</b>	P260	-	Do not breathe dust/fume/gas/mist/vapours/spray.
	P273	-	Avoid release to the environment
	P280	-	Wear protective gloves/protective clothing/eye protection/face protection.
<b>Response</b>	P310	-	Immediately call a POISON CENTRE or doctor/physician.
	P390	-	Absorb spillage to prevent material damage
	P303 + P361 + P353	-	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P305 + P351 + P338	-	IF IN EYES: Rinse cautiously with water for several minutes. Remove Contact lenses, if present and easy to do so. Continue rinsing.
<b>Storage</b>	P403 + P233	-	Store in a well-ventilated place. Keep container tightly closed.
<b>Disposal</b>	P501	-	Dispose of contents/container in accordance with local regulation.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Substance name:	Concentration
<b>Sodium hypochlorite</b>	>= 5 - < 16 %
CAS-No.: 7681-52-9 / EC-No.: 231-668-3 / Index-No.: 017-011-00-1	

**4. FIRST AID MEASURES**

**4.1. Description of necessary first-aid measures**

4.1.1. If inhaled

- Move to fresh air.
- Give Oxygen or artificial respiration if needed.
- Victim to lie down in the recovery position, cover and keep him warm.
- Call a physician immediately.

4.1.2. In case of eye contact-SPEED IS ESSENTIAL

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- In the case of difficulty of opening the lids, administer an analgesic eye wash (oxybuprocaine).
- Call a physician or poison control centre immediately.
- Take victim immediately to hospital.

4.1.3. In case of skin contact-SPEED IS ESSENTIAL

- Take off contaminated clothing and shoes immediately.
- Wash off immediately with plenty of water.
- Keep warm and in a quiet place.
- Call a physician or poison control centre immediately.
- Wash contaminated clothing before re-use.

4.1.4. If swallowed

- Call a physician or poison control centre immediately.
- Take victim immediately to hospital.
- If swallowed, rinse mouth with water (only if the person is conscious).
- Do NOT induce vomiting.
- Artificial respiration and/or oxygen may be necessary.

**4.2. Most important symptoms/effects, acute and delayed**

4.2.1. Inhalation

- Severe respiratory irritant
- Irritating to mucous membranes
- Symptoms: Breathing difficulties, cough, chemical pneumonitis, pulmonary oedema
- Repeated or prolonged exposure: Nose bleeds, chronic bronchitis

4.2.2. Skin contact

- Severe skin irritation.
- Symptoms: Redness, Swelling of tissue, Burn
- Repeated exposure: Ulceration

4.2.3. Eye contact

- Severe eye irritation
- May cause irreversible eye damage. May cause blindness.
- Symptoms: Redness, Lachrymation, Swelling of tissue, Burn

4.2.4. Ingestion

- If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.
- Risk of chemical pneumonitis from product inhalation.
- Risk of shock.
- Symptoms: Nausea, Abdominal pain, Bloody vomiting, Diarrhoea, Suffocation, Cough, Severe shortness of breath.
- Risk of: Respiratory disorder.

#### 4.3. Indication of immediate medical attention and special treatment needed, if necessary

- Indication of immediate medical attention and special treatment needed, if necessary.
- The seriousness of the lesions and the prognosis of intoxication depend directly on the concentration and duration of exposure.

### 5. FIRE-FIGHTING MEASURES

#### 5.1. Extinguishing media

##### 5.1.1. Suitable extinguishing media

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

##### 5.1.2. Unsuitable extinguishing media

- None.

#### 5.2. Specific hazards arising from the chemical

- Not combustible
- Hazardous decomposition products formed under fire conditions.
- Promotes combustion of combustible products or materials.

#### 5.3. Special protective actions for fire-fighters

- In the event of fire, wear self-contained breathing apparatus.
- Use personal protective equipment.
- Wear chemical resistant oversuit.
- Cool containers / tanks with water spray.
- Suppress (knock down) gasses/vapours/mists with a water spray jet.

### 6. ACCIDENTAL RELEASE MEASURES

#### 6.1. Personal precautions, protective equipment and emergency procedures

##### 6.1.1. Advice for non-emergency personnel

- Prevent further leakage or spillage if safe to do so.
- Keep away from Incompatible products.

##### 6.1.2. Advice for emergency responders

- Isolate the area. Evacuate personnel to safe areas.
- Keep people away from and upwind of spill/leak.
- Ventilate the area.
- Wear suitable protective clothing.
- Wear self-contained breathing apparatus in confined spaces, in cases where the oxygen level is depleted, or in case of significant emissions.

#### 6.2. Environmental precautions

- Should not be released into the environment.
- Do not flush into surface water or sanitary sewer system.
- In case of accidental release or spill, immediately notify the appropriate authorities if required by Federal, State/Provincial and local laws and regulations.

#### 6.3. Methods and materials for containment and cleaning up

- Dam up.
- Soak up with inert absorbent material.
- Prevent product from entering drains.
- Keep in properly labelled containers.
- Keep in suitable, closed containers for disposal.

#### 6.4. Reference to other sections

- Refer to protective measures listed in sections 7 and 8

### 7. HANDLING AND STORAGE

#### 7.1. Precautions for safe handling

- Provide appropriate exhaust ventilation.
- Use only in well-ventilated areas.
- Keep away from incompatible products.
- To avoid thermal decomposition, do not overheat.
- Use only equipment and materials which are compatible with the product.
- Do not confine the product in a circuit, between closed valves, or in a container without a vent.

#### 7.2. Conditions for storage, including incompatibilities

##### 7.2.1. Storage

- Store in original container.
- Keep in a well-ventilated place. Keep cool.
- Keep in properly labelled containers.
- Keep container closed (vented cap).
- Keep in a bonded area.
- Protect from direct sunlight. Store in a cool and dark place to preserve the quality of the product.
- Keep away from incompatible products.

7.2.2. Packaging material

7.2.2.1. *Suitable material*

- Reinforced polyester, Steel coated, PVC, Polyethylene, Glass

7.2.2.2. *Unsuitable material*

- Metals

7.3. **Specific use(s)**

- For further information, please contact: Supplier

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

8.1.1. Exposure Limit Values

**Sodium hypochlorite**

- US. ACGIH Threshold Limit Values

Remarks: none established

**Sodium chlorate**

- US.ACGIH Threshold Limit Values

Remarks: None established

**Sodium hydroxide**

- Ireland: Code of Practice for the Safety Health & Welfare at Work (Chemical Agents) Regulations 2011 (SI No. 619 of 2001)  
Occupational Exposure Limit Value(15 minute reference period) = 2 mg/m<sup>3</sup>
- UK. EH40 Workplace Exposure Limits (WELs) 2007  
Short term exposure limit = 2 mg/m<sup>3</sup>
- US. ACGIH Threshold Limit Values 2009  
Ceiling Limit Value = 2 mg/m<sup>3</sup>

**Sodium carbonate**

- SAEL (Solvay Acceptable Exposure Limit) 2007  
TWA = 10 mg/m<sup>3</sup>
- US. ACGIH Threshold Limit Values  
Remarks: none established

8.1.2. Other information on limit values

8.1.2.1. *Predicted No Effect Concentration*

- Fresh water, 0.21 µg/l
- Marine water, 0.042 µg/l
- Sewage treatment plants, 0.03 mg/l

8.1.2.2. *Derived No Effect Level / Derived minimal effect level*

- Workers, Inhalation, Acute effects, 3.1 mg/m<sup>3</sup>, Systemic toxicity
- Workers, Inhalation, Acute effects, 3.1 mg/m<sup>3</sup>, Local effects
- Workers, Inhalation, Chronic effects, 1.55 mg/m<sup>3</sup>, Systemic toxicity
- Workers, Dermal, Chronic effects, 0.5%, Local effects
- Workers, Inhalation, 1.55 mg/m<sup>3</sup>, Local effects

### 8.2. Exposure controls

8.2.1. Appropriate engineering controls

- Provide local ventilation appropriate to the product decomposition risk (see section 10)
- Provide appropriate exhaust ventilation at machinery.
- Apply technical measures to comply with the occupational exposure limits.

8.2.2. Individual protection measures

8.2.2.1. *Respiratory protection*

- In case of insufficient ventilation, wear suitable respiratory equipment.
- When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
- Self-contained breathing apparatus (EN 133)
- Respirator with a vapour filter (EN 141)
- In case of decomposition (see section 10), face mask with combined type B-P2 cartridge.

8.2.2.2. *Hand protection*

- Impervious gloves in compliance with EN374:2003.
- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). The following list may be used for guidance but is not exhaustive:
- Nitrile rubber- NBR: thickness >= 0,35mm; breakthrough time>=480min.
- Polyvinyl chloride- PVC: thickness >=0,5mm; breakthrough time>=480min.
- Butyl rubber: thickness >= 0,5mm; breakthrough time>=480min.
- Dispose of contaminated gloves appropriately.
- Unsuitable material: Leather

8.2.2.3. *Eye protection*

- Chemical resistant goggles or full-face shield must be worn.
- If splashes are likely to occur, wear: Tightly fitted safety goggles and full face shield.

8.2.2.4. *Skin and body protection*

- Wear suitable protective clothing.
- Chemical resistant apron
- If splashes are likely to occur, wear: Rubber or plastic boots

8.2.2.5. *Hygiene measures*

- Ensure that eyewash stations and safety showers are close to the workstation location.
- Take off contaminated clothing and shoes immediately.
- Wash contaminated clothing before re-use.
- When using, do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

8.2.3. Environmental Exposure controls

- Dispose of rinse water in accordance with local and national regulations.

**9. PHYSICAL AND CHEMICAL PROPERTIES****9.1. Physical and chemical properties**9.1.1. General Information

▪ <b>Appearance</b>	liquid
▪ <b>Colour</b>	yellow, green
▪ <b>Odour</b>	pungent-Chlorine
▪ <b>Molecular Weight</b>	74.5 g/mol

9.1.2. Important health safety and environmental information

▪ <b>pH</b>	>11 (15% solution)
▪ <b>pKa</b>	No data
▪ <b>Melting point/freezing point</b>	-17°C (15% solution); crystals of Sodium Chloride may form at low temperature (<5°C)
▪ <b>Boiling point/boiling range</b>	110
▪ <b>Flash point</b>	not applicable
▪ <b>Evaporation rate</b>	No data
▪ <b>Flammability (solid, gas)</b>	not applicable
▪ <b>Flammability</b>	The product is not flammable
▪ <b>Explosive properties</b>	Not explosive.
▪ <b>Vapour pressure</b>	2.5 kPa, at 20°C
▪ <b>Vapour density</b>	2.5
▪ <b>Density</b>	No data
▪ <b>Relative density</b>	1.25 at 20°C (Chlorine;15%) ;1.3, at 21.2°C (Chlorine; 24.3%)
▪ <b>Bulk density</b>	No data
▪ <b>Solubility(ies)</b>	Completely miscible
▪ <b>Solubility/qualitative</b>	no data available
▪ <b>Partition coefficient: n-octanol/water</b>	not applicable
▪ <b>Autoignition temperature</b>	not applicable
▪ <b>Decomposition temperature</b>	40°C, Slow decomposition
▪ <b>Viscosity</b>	6.4 mPa.s
▪ <b>Oxidizing properties</b>	Non oxidizer

**9.2. Other information**

▪ Surface tension	82.4 mN/m 20°C (Chlorine; 24.3%)
-------------------	----------------------------------

**10. STABILITY AND REACTIVITY****10.1. Chemical stability**

- Stable under recommended storage conditions.
- Corrosive in contact with metals

**10.2. Conditions to avoid**

- Keep away from direct sunlight
- To avoid thermal decomposition, do not overheat.
- Keep away from contact with metals (Nickel, Copper, Cobalt, Aluminium, Manganese, etc.)
- Freezing

**10.3. Materials to avoid**

- Metals, Salts of metals, Acids, Organic materials

**10.4. Hazardous decomposition products**

- Risk of decomposition, Chlorine, Sodium chlorate
- Hypochlorous acid, predominant at acid pH, is 4 to 5 fold more toxic than hypochlorite ion. The release of other hazardous decomposition products is possible.

## 11. TOXICOLOGICAL INFORMATION

Chlorine gas produced under fire or acidic conditions is toxic by inhalation.

### 11.1. Acute toxicity

#### 11.1.1. Acute oral toxicity

- LD50, rat, > 1,100 mg/kg (Chlorine)

#### 11.1.2. Acute inhalation toxicity

- LC50, 1 h, rat, > 10.5 mg/l (Chlorine)

#### 11.1.3. Acute dermal toxicity

- LD50, rabbit, > 20,000 mg/kg (Chlorine)

### 11.2. Skin corrosion/irritation-Causes severe skin burns.

- rabbit, corrosive effects

### 11.3. Serious eye damage/eye irritation-Causes serious eye damage

- rabbit, Severe eye irritation

### 11.4. Respiratory or skin sensitization-Irritating to respiratory tract.

- guinea pig, did not cause sensitization on laboratory animals.

### 11.5. Mutagenicity

- in vitro, Ambiguous mutagenic effect
- in vivo tests did not show mutagenic effects

### 11.6. Carcinogenicity

- Oral, rat, 50 mg/kg, NOAEL

### 11.7. Toxicity for reproduction

- Oral, rat, 5 mg/kg, Effects on fertility, NOAEL, (Chlorine)
- Oral, rat, 5.7 mg/kg, Developmental Toxicity, NOAEL, (Chlorine)

### 11.8. Specific target organ toxicity – single exposure

- Human experience, Remarks: May cause respiratory irritation.

### 11.9. Repeated dose toxicity

- Oral, 90-day, rat, 50 mg/kg, NOAEL

### 11.10. Other information

- Toxic effect linked with corrosive properties

## 12. ECOLOGICAL INFORMATION

### 12.1. Toxicity

- Fishes, various species, LC50, 96 h, 0.06mg/l, fresh water (active chlorine)
- Fishes, *Menidia peninsulae*, NOEC, 96 h, 0.04 mg/l, salt water (Chlorine)
- Fishes, various species, 96 h, 0.032 mg/l, Marine water (active chlorine)
- Crustaceans, various species, EC50, 48 h, 0.026 mg/l (Chlorine)
- Crustaceans, *Daphnia magna*, EC50, 48 h, 0.141 mg/l, fresh water (active chlorine)

### 12.2. Persistence and degradability

#### 12.2.1. Abiotic degradation

- Water, photolysis,  $t_{1/2} = 12$  min  
Result: photolysis  
Conditions: pH 8
- Water, photolysis,  $t_{1/2} = 60$  min  
Result: photolysis  
Conditions: pH5
- Air, indirect photo-oxidation,  $t_{1/2} = 115$  d  
Degradation products: Chlorine
- Water, Hydrolysis  
Result: Chemical degradation  
Degradation products: chlorides

#### 12.2.2. Biodegradation

- The methods for determining biodegradability are not applicable to inorganic substances.

### 12.3. Bioaccumulative potential

- Does not bioaccumulate.

### 12.4. Mobility

- Water, Soil  
Considerable solubility and mobility
- Soil/sediments, log KOC: 1.12  
Highly mobile in soils
- Air, Henry's law constant (H), 0.076 Pa.m<sup>3</sup>/mol, 20°C  
Non-significant volatility

### 12.5. Other adverse effects

- No data available

### 13. DISPOSAL CONSIDERATIONS

#### 13.1. Waste disposal methods

- In accordance with local and national regulations.
- Reduce the product with sulphite or hydrogen peroxide.

#### 13.2. Contaminated packaging

- Empty containers.
- Clean container with water.
- The empty and clean containers are to be reused in conformity with regulations.

### 14. TRANSPORT INFORMATION (<16% SOLUTION)

#### 14.1. International transport regulations

##### - IATA-DGR

UN number	UN 1791
Class	8
Packing group	II
ICAO-Labels	8 - Corrosive
Proper shipping name	SODIUM HYPOCHLORITE SOLUTION

##### - IMDG

UN number	UN 1791
Class	8
Packing group	II
IMDG-Labels	8 - Corrosive
HI/UN No.	1791
EmS	F-A S-B
Remarks	Marine Pollutant
Proper shipping name	SODIUM HYPOCHLORITE SOLUTION

##### - ADR

UN number	UN 1791
Class	8
Packing group	II
ADR/RID-Labels	8 – Corrosive
HI/UN No.	80 / 1791
Remarks	Environmentally hazardous
Proper shipping name	SODIUM HYPOCHLORITE SOLUTION

##### - RID

UN number	UN 1791
Class	8
Packing group	II
ADR/RID-Labels	8 – Corrosive
HI/UN No.	80 / 1791
Remarks	Environmentally hazardous
Proper shipping name	SODIUM HYPOCHLORITE SOLUTION

##### - ADN

UN number	UN 1791
Class	8
Packing group	II
ADR/RID-Labels	8 – Corrosive
Remarks	Environmentally hazardous
Proper shipping name	SODIUM HYPOCHLORITE SOLUTION

### 15. REGULATORY INFORMATION

#### 15.1. Applicable Laws or Regulations

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), as amended.
- Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations, as amended.
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, as amended.
- COUNCIL DIRECTIVE 96/82/EC on the control of major-accident hazards involving dangerous substances as amended.
- Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended.
- REGULATION (EC) No 166/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC.

**SODIUM HYPOCHLORITE, 5% <= C < 16% - SAFETY DATA SHEET – according to Regulation (EC) No. 1907/2006**

- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste.
- EH40/2005. Workplace Exposure Limits, as amended through 1,10,2007 (WELs). Published by the Health and Safety Executive (HSE). Issued under the Control of Substances Hazardous to Health Regulations – as amended.

**15.2. Chemical Safety Assessment**

- A Chemical Safety Assessment has been carried out for this substance.

**15.3. Notification status**

<b>Inventory Information</b>	<b>Status</b>
Toxic Substance Control Act list (TSCA)	- In compliance with inventory
Australian Inventory of Chemical Substances (AICS)	- In compliance with inventory
Canadian Domestic Substances List (DSL)	- In compliance with inventory
Korean Existing Chemicals Inventory (KECI (KR))	- In compliance with inventory
EU list of existing chemical substances (EINECS)	- In compliance with inventory
Japanese Existing and New Chemical Substances (MITI List) (ENCS)	- In compliance with inventory
Inventory of Existing Chemical Substances (China) (IECS)	- In compliance with inventory
Philippine Inventory of Chemicals and Chemical Substances (PICCS)	- In compliance with inventory
New Zealand Inventory of Chemicals (NZIOC)	- In compliance with inventory

**16. OTHER INFORMATION**

**16.1. Full text of H-Statements referred to under section 3**

H271	-	May cause fire or explosion; strong oxidiser.
H290	-	May be corrosive to metals.
H302	-	Harmful if swallowed.
H314	-	Causes severe skin burns and eye damage.
H318	-	Causes serious eye damage.
H319	-	Causes serious eye irritation
H335	-	May cause respiratory irritation
H400	-	Very toxic to aquatic life
H411	-	Toxic to aquatic life with long lasting effects

**16.2. Full text of R-phrases referred to under sections 2 and 3**

**16.2.1. Full text of R-phrases referred to under section 2**

R34	-	Causes burns.
R37	-	Irritating to respiratory system.
R50	-	Very toxic to aquatic organisms
R31	-	Contact with acids liberates toxic gas.

**16.2.2. Full text of R-phrases referred to under section 3**

R 9	-	Explosive when mixed with combustible material.
R22	-	Harmful if swallowed.
R31	-	Contact with acids liberates toxic gas
R34	-	Causes burns.
R35	-	Causes severe burns.
R36	-	Irritating to eyes.
R37	-	Irritating to respiratory system.
R50	-	Very toxic to aquatic organisms
R51/53	-	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic Environment.

**16.3. Other information**

<b>Section</b>	<b>Revisions to Previous issue</b>
8	Inclusion of OELV's from Irish Code of Practice-Chemical Agents. Update of information on hand protection.
14	IMDG Remark: Marine Pollutant
All	General reformatting without content change.

- Distribute new edition to clients

This SDS is only intended for the indicated country to which it is applicable. The European SDS format compliant with the applicable European legislation is not intended for use nor distribution in countries outside the European Union with the exception of Norway and Switzerland. Safety datasheets applicable in other countries/regions are available upon request. The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In this case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.