24. ES 24: Widespread use by professional workers; Use of nickel metal-derived micronutrient in compostable bags in biogas production

24.1. Title section

Sector of use: Agriculture, forestry, fishery (SU 1)

Environment	
1: Use of nickel metal-derived micronutrient in compostable bags in biogas production	ERC 8b
Worker	
2: Handling of solutions (reception and charging/discharging the bioreactor)	PROC 8b
3: Handling of biodegradable bags (reception and charging/discharging the bioreactor)	PROC 21

24.2. Conditions of use affecting exposure

24.2.1. Control of environmental exposure: Use of nickel metal-derived micronutrient in compostable bags in biogas production (ERC 8b)

Technical and organisational conditions and measures
The substance should not be released to air
The substance should not be released to water
Conditions and measures related to biological sewage treatment plant
Municipal sewage treatment plant is assumed.
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.

24.2.2. Control of worker exposure: Handling of solutions (reception and charging/discharging the bioreactor) (PROC 8b)

Product (article) characteristics
Limit the substance content in the product to 20 %
Maximum emission potential covered in this ES: Very low.
Physical form of product: Solution.
Amount used (or contained in articles), frequency and duration of use/exposure
Covers daily exposures up to 8 hours
Technical and organisational conditions and measures
Covers use at ambient temperatures.

24.2.3. Control of worker exposure: Handling of biodegradable bags (reception and charging/discharging the bioreactor) (PROC 21)

Product (article) characteristics

Limit the substance content in the product to 1 %
Physical form of product: Massive object (biodegradable bags).

24.3. Exposure estimation and reference to its source

24.3.1. Environmental release and exposure: Use of nickel metal-derived micronutrient in compostable bags in biogas production (ERC 8b)

Release route	Release rate	Release estimation method
Water	0 kg/day	Estimated release factor
Air	0 kg/day	Estimated release factor
Soil	0 kg/day	Estimated release factor

24.3.2. Worker exposure: Handling of solutions (reception and charging/discharging the bioreactor) (PROC 8b)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.012 mg/m³ (Measured data)	0.24
Inhalation, local, long term	0.012 mg/m³ (Measured data)	0.24
Inhalation, local, acute	0.047 mg/m³ (Measured data)	< 0.01
Dermal, local, long term	0.76 µg/cm² (Measured data)	0.022
Combined, systemic, long term		0.24

24.3.3. Worker exposure: Handling of biodegradable bags (reception and charging/discharging the bioreactor) (PROC 21)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	8E-3 mg/m³ (Measured data)	0.16
Inhalation, local, long term	8E-3 mg/m³ (Measured data)	0.16
Inhalation, local, acute	0.037 mg/m³ (Measured data)	< 0.01
Dermal, local, long term	0.076 µg/cm² (Measured data)	< 0.01
Combined, systemic, long term		0.16

24.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Guidance: Please refer to Section 0.3 of this “ES for Communication”.