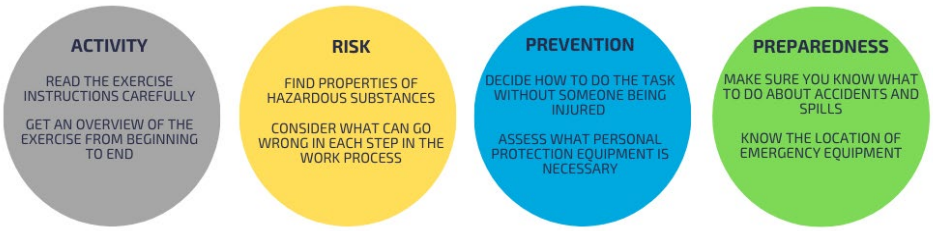
Chemical workplace assessment [Link]



The **STOP** principle

Substitution
Technical precautions
Organisational precautions
Personal protective equipment

Activity:

Period/date: 3/3 - 26

Project Lab Technician: Jesper Gemke

Name(s): Amalie Heltborg

Supervisor:

Approved: _____

1. Reagents/products (conc.) included in the activity:

A: czpack minimal media

B: TMS (Trace metal solution)

C: czpack minimal media with ammonium sulphate as a nitrogen source instead of sodium nitrate

D: TMS DTU (Trace metal solution DTU)

E: Mineral mix

2. Name and quantity of the substances/materials included in the individual reagents:

Reagent	Total quantity of reagent prepared ([g]/[mL]/[mol])	Compound	Quantity of individual compound used [g/mL/mol]	Substitution (STOP)	CAS No./ P-number
A: czpack minimal media	1000 mL	Glucose	20 g		P no.: p206965 CAS no.: 50-99-7
		dipotassium phosphate	1 g		P no.: p294621 CAS no.: 7758-11-4
		potassium chloride	0.5 g		P no.: p294048 CAS no.: 7447-40-7
		Sodium nitrate	3 g		P no.: p294816 CAS no.: 7631-99-4
		Magnesium sulphate	0.5 g		P no.: p203926 CAS no.: 10034-99-8
		TMS	1 mL		

B: TMS	100 mL	Iron sulphate heptahydrate	1 g		CAS no. 7782-63-0 P. no. 201120
		zinc sulphate heptahydrate	1 g		P no.: p207913 CAS no.: 7446-20-0
		copper sulphate pentahydrate	0.5 g		P no.: p204028 CAS No. 7758-99-8.
A: czpack minimal media with ammonium sulphate as a nitrogen source instead of sodium nitrate	1000 L	Glucose	20 g		P no.: p206965 CAS no.: 50-99-7
		dipotassium phosphate	1 g		P no.: p294621 CAS no.: 7758-11-4
		potassium chloride	0.5 g		P no.: p294048 CAS no.: 7447-40-7
		Ammonium sulphate	3 g		P no.: p294343 CAS no.: 7783-20-2
		Magnesium sulphate	0.5 g		P no.: p203926 CAS no.: 10034-99-8
		TMS	1 mL		

D: TMS DTU	1000 mL	copper sulphate pentahydrate	0.4 g		P no.: p204028 CAS No. 7758-99-8.
		Sodium tetraborate decahydrate (Borax decahydrate)	0.04 g		CAS: 1303-96-4
		Iron sulphate heptahydrate	0.8 g		CAS no. 7782-63-0 P. no. 201120
		Manganese(II) sulfate monohydrate	0.8 g		CAS no. 10034-96-5
		Sodium molybdate dihydrate	0.8 g		CAS no. 10102-40-6
		Zinc sulphate heptahydrate	8 g		P no.: p207913 CAS no.: 7446-20-0
E: Mineral mix	1000 mL	potassium chloride	26 g		P no.: p294048 CAS no.: 7447-40-7
		Magnesium sulphate	26 g		P no.: p203926 CAS no.: 10034-99-8
		Monopotassium phosphate	76 g		CAS: 7778-77-0
		TMS DTU	50 mL		

3. Process description (Analysis/Process: (STOP))

Detailed description/diagram of the work process that includes substances, materials and equipment that can contribute to the risk. Are there points during the procedure with higher risk (e.g. upon heating, mixing, …)?

These are used to produce fermentation media by mixing the compounds together and autoclaving or UV treating them. They do not have any specific risk points during the process.

4. Safety in preparing reagents

Find hazard labelling and waste group for the concentrated substances and materials used in preparing reagents.

Substance/product	Hazard pictogram & signal word	H-phrases	P-phrases	Waste group
Glucose	non	non	non	H
dipotassium phosphate	non	non	non	X
potassium chloride	non	non	non	X
Sodium nitrate		H272: May intensify fire; oxidizer. H319: Causes serious eye irritation.	P210: Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. P220: Keep/Store away from clothing and other combustible materials. P280: Wear protective gloves/eye protection. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P370+P378: In case of fire: Use dry powder or sand to extinguish.	O
Magnesium sulphate	Non	non	non	X

Iron sulphate heptahydrate		H302: Harmful if swallowed. H319: Causes serious eye irritation. H315: Causes skin irritation.	P280: Wear protective gloves/eye protection. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	X
zinc sulphate heptahydrate		H302: Harmful if swallowed. H318: Causes serious eye damage. H410: Very toxic to aquatic life with long-lasting effects.	280: Wear protective gloves/eye protection. P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P273: Avoid release to the environment.	X
copper sulphate pentahydrate		H302: Harmful if swallowed. H318: Causes serious eye damage. H410: Very toxic to aquatic life with long-lasting effects.	P280: Wear protective gloves/eye protection. P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P273: Avoid release to the environment.	
Ammonium sulphate	Non	Non	Non	X

Sodium tetraborate decahydrate (Borax decahydrate)		H360FD: May damage fertility. May damage the unborn child. H319: Causes serious eye irritation.	P201: Obtain special instructions before use. P280: Wear protective gloves/eye protection. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P308+P313: IF exposed or concerned: Get medical advice/attention.	
Manganese(II) sulfate monohydrate		H318: Causes serious eye damage. H373: May cause damage to organs through prolonged or repeated exposure. H411: Toxic to aquatic life with long-lasting effects.	P260: Do not breathe dust/fume/gas/mist/vapors/spray. P280: Wear protective gloves/eye protection/face protection. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P314: Get medical advice/attention if you feel unwell. P273: Avoid release to the environment.	
Sodium molybdate dihydrate	Non	Non	Non	X
Monopotassium phosphate	non	non	non	X

5. Prevention and preparedness when handling pure substances while preparing individual reagents/products.

Examine special precautions, personal protective equipment (**STOP**) and other preventive measures as well as emergency preparedness in case of accident/spillage/etc.

Compound/product	Prevention (Special precautions, personal protective equipment, etc.)	Preparedness
Glucose	There is no special equipment needed, when handling the product Handle in accordance with good industrial hygiene and safety practice: - Avoid unnecessary contact with skin and eyes. - Avoid inhalation of dust/vapours. - Ensure adequate ventilation. - Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.). - Wash hands after handling. - Store the substance properly. - Dispose of waste appropriately. Know where safety equipment is localized - Eye washer - Emergency shower - fire hose - fire extinguisher - Cat litter and spillage blanket	First response: - Inhalation: Remove person to fresh air. - Skin: Rinse with water. - Eyes: Rinse with eyewash. Remove contact lenses. - Ingestion: Rinse mouth and drink water. Do not provoke vomiting. Contact emergency personnel in case of fainting or severe health issues In case of spillage: - Powder: Use vacuum with HEPA filter to vacuum up the spilled powder - Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.
dipotassium phosphate	There is no special equipment needed, when handling the product Handle in accordance with good industrial hygiene and safety practice: - Avoid unnecessary contact with skin and eyes. - Avoid inhalation of dust/vapours. - Ensure adequate ventilation. - Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.). - Wash hands after handling. - Store the substance properly. - Dispose of waste appropriately. Know where safety equipment is localized - Eye washer - Emergency shower - fire hose - fire extinguisher - Cat litter and spillage blanket	First response: - Inhalation: Remove person to fresh air. - Skin: Rinse with water. - Eyes: Rinse with eyewash. Remove contact lenses. - Ingestion: Rinse mouth and drink water. Do not provoke vomiting. Contact emergency personnel in case of fainting or severe health issues In case of spillage: - Powder: Use vacuum with HEPA filter to vacuum up the spilled powder - Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.
potassium chloride	There is no special equipment needed, when handling the product	First response: - Inhalation: Remove person to fresh air. - Skin: Rinse with water.

	Handle in accordance with good industrial hygiene and safety practice: **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**
Sodium nitrate	**Wear gloves and googles when handling.** **Avoid contact with skin and eyes.** **Keep away from fire or open flames.** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**
Magnesium sulphate	**There is no special equipment needed, when handling the product** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.**

	- Ensure adequate ventilation. **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**
Iron sulphate heptahydrate	**Wear gloves and googles when handling.** **Avoid contact with skin and eyes.** **Handle accordingly in case of spillage** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**
zinc sulphate heptahydrate	**Wear gloves and googles when handling.** **Avoid contact with skin and eyes.** **Handle accordingly in case of spillage** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to**

	- Wash hands after handling. **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**
copper sulphate pentahydrate	**Wear gloves and googles when handling.** **Avoid contact with skin and eyes.** **Handle accordingly in case of spillage** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**
Ammonium sulphate	**There is no special equipment needed, when handling the product** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with**

	- Emergency shower - fire hose - fire extinguisher - Cat litter and spillage blanket	a vacuum. Otherwise use the spillage blanket for the liquid.
Sodium tetraborate decahydrate (Borax decahydrate)	Wear gloves and googles when handling. Avoid contact with skin and eyes. Do not inhale. Handle accordingly in case of spillage Handle in accordance with good industrial hygiene and safety practice: - Avoid unnecessary contact with skin and eyes. - Avoid inhalation of dust/vapours. - Ensure adequate ventilation. - Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.). - Wash hands after handling. - Store the substance properly. - Dispose of waste appropriately. Know where safety equipment is localized - Eye washer - Emergency shower - fire hose - fire extinguisher - Cat litter and spillage blanket	First response: - Inhalation: Remove person to fresh air. - Skin: Rinse with water. - Eyes: Rinse with eyewash. Remove contact lenses. - Ingestion: Rinse mouth and drink water. Do not provoke vomiting. Contact emergency personnel in case of fainting or severe health issues In case of spillage: - Powder: Use vacuum with HEPA filter to vacuum up the spilled powder - Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.
Manganese(II) sulfate monohydrate	Wear gloves and googles when handling. Avoid contact with skin and eyes. Do not inhale. Handle accordingly in case of spillage Handle in accordance with good industrial hygiene and safety practice: - Avoid unnecessary contact with skin and eyes. - Avoid inhalation of dust/vapours. - Ensure adequate ventilation. - Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.). - Wash hands after handling. - Store the substance properly. - Dispose of waste appropriately. Know where safety equipment is localized - Eye washer - Emergency shower - fire hose - fire extinguisher - Cat litter and spillage blanket	First response: - Inhalation: Remove person to fresh air. - Skin: Rinse with water. - Eyes: Rinse with eyewash. Remove contact lenses. - Ingestion: Rinse mouth and drink water. Do not provoke vomiting. Contact emergency personnel in case of fainting or severe health issues In case of spillage: - Powder: Use vacuum with HEPA filter to vacuum up the spilled powder - Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.

Sodium molybdate dihydrate	**There is no special equipment needed, when handling the product** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**
Monopotassium phosphate	**There is no special equipment needed, when handling the product** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**

6. Safety in handling reagents/products

Calculate the hazard labelling for the reagents (CLP calculator, Kemibrug.dk) and find waste groups (sorting key), special conditions regarding storage are noted. Think about dangers involved in the expected reaction product.

Reagent/product	Hazard pictogram & signal word	H-phrases	P-phrases	Waste group	Storage
A: minimal media		H272: May intensify fire; oxidizer.	P210: Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. P220: Keep/Store away from clothing and other combustible materials. P370+P378: In case of fire: Use dry powder or sand to extinguish.	X	In a thightly closed bottle
B: TMS	non	**H412:** Harmful to aquatic life with long-lasting effects.	non	X	Stored in a tightly capped bottle
C: czpack minimal media with ammonium sulphate as a nitrogen source instead of sodium nitrate		H319: Causes serious eye irritation. H272: May intensify fire; oxidizer.	P210: Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. P220: Keep/Store away from clothing and other combustible materials. P370+P378: In case of fire: Use dry powder or sand to extinguish.	X	Store in a tightly capped bottle
D: TMS DTU	non	**H412:** Harmful to aquatic life with long-lasting effects.	non	X	Stored in a tightly capped bottle
E: Mineralmix	non	non	non	X	Stored in a capped bottle

7. Prevention and preparedness when using the individual reagent/products.

Examine special precautions, personal protective equipment (**STOP**) and other preventive measures as well as emergency preparedness in case of accident/spillage/etc. Consider, whether the required protective equipment is the same throughout the whole experiment or whether it can vary, e.g. depending on temperature.

	Prevention (Special precautions, personal protective equipment, etc.)	**Preparedness**
A: minimal media	**Wear gloves and googles when handling.** **Avoid contact with skin and eyes. Do not inhale.** **Handle accordingly in case of spillage** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**
B: TMS	**There is no special equipment needed, when handling the product** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**

	- fire extinguisher **- Cat litter and spillage blanket**	
C: czpack minimal media with ammonium sulphate as a nitrogen source instead of sodium nitrate	**Wear gloves and googles when handling.** **Avoid contact with skin and eyes. Do not inhale.** **Handle accordingly in case of spillage** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**
D: TMS DTU	**There is no special equipment needed, when handling the product** **Handle in accordance with good industrial hygiene and safety practice:** **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.** **- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**
E: Mineralmix	**There is no special equipment needed, when handling the product**	**First response:** **- Inhalation: Remove person to fresh air.** **- Skin: Rinse with water.**

	Handle in accordance with good industrial hygiene and safety practice: **- Avoid unnecessary contact with skin and eyes.** **- Avoid inhalation of dust/vapours.** **- Ensure adequate ventilation.** **- Use appropriate personal protective equipment (gloves, safety glasses, lab coat, etc.).** **- Wash hands after handling.** **- Store the substance properly.** **- Dispose of waste appropriately.** **Know where safety equipment is localized** **- Eye washer** **- Emergency shower** **- fire hose** **- fire extinguisher** **- Cat litter and spillage blanket**	**- Eyes: Rinse with eyewash. Remove contact lenses.** **- Ingestion: Rinse mouth and drink water. Do not provoke vomiting.** **Contact emergency personnel in case of fainting or severe health issues** **In case of spillage:** **- Powder: Use vacuum with HEPA filter to vacuum up the spilled powder** **- Liquid: Use sand or cat litter to soak the spillage and vacuum the litter or sand with a vacuum. Otherwise use the spillage blanket for the liquid.**

8. Special risks for pregnant and breastfeeding women?

(Mandatory, if any of the following H-phrases occurs for any involved step: H350 +H351, H340 + H341, H360 + H361 + H362, H310+H311+H312, H370+H371+H372 +H373). Also mandatory, if a person involved in the work is pregnant or breast-feeding.

Is the work process/area safe for pregnant or breastfeeding women? Consider all the steps involved, including the surroundings and physical hazards like ultrasound, noise, etc.

☒Yes ☐ No

Reasons:

9. Proposals for improving safety other than substitution (facultative)

What can be done to minimize the risks involved in this experiments?