Risk Assessment of Laboratory Work with Chemicals (AFS 2011:19)1 (LBE)2 (MSBFS 2020:1)3

Department/Division: **Pure and Applied Biochemistry**

Operation/Activity: **Plasmid preparation**

The operation includes handling of the following chemicals, mixtures and solutions

	Chemical/Mixture/Solution	CAS No.	Amount	Indications of danger
1	Ethanol 96–99%	64-17-5	64 ml	Highly flammable liquid and vapour. Causes serious eye irritation.
2	RNase A	9001-99-4	4 mg	Cause irritation or allergic reaction if inhaled or in contact with skin/eyes
3	Jena BioScience Plasmid Mini-Prep Kit	N/A	N/A	Exact composition is not disclosed in the SDS. According to the SDS hazard identification for the kit, these components should be handled as potentially harmful if swallowed, in contact with skin, or if inhaled. They may cause skin irritation, serious eye irritation, allergic skin reaction, and respiratory irritation.

Identification of separate operations/activities that may involve the risk of accident or risk to health

	Operation/Activity	Risk/Problem	Consequence	Probability	Assessed risk	Risk-reducing measures
1	Handling 1–3 mL E. coli culture, centrifuging cells, and resuspending the pellet.	Possible exposure to bacterial culture or recombinant biological material	Serious	Possible	Hazardous	Wear lab coat, gloves and eye protection. Keep tubes closed whenever possible.
2	Handling lysis buffer, neutralization buffer and activation buffer.	Chemical contact with skin or eyes, Lysis buffer is also likely alkaline/irritating because the method is based on alkaline lysis.	Serious	Possible	Hazardous	Pipette carefully and avoid splashes. Keep bottles and tubes closed when not in use. Do not touch face, phone, keyboard or personal items with contaminated gloves. Do not dispose of unknown kit buffers directly into the sink.
3	Handling ethanol and ethanol-containing washing buffer	Ethanol is highly flammable. Vapours may ignite near flames, sparks or hot surfaces. Ethanol can also cause serious eye irritation.	Mild	Possible	Hazardous	Keep ethanol away from flames, heat sources, sparks and electrical ignition sources. Do not use near Bunsen burners. Work with small volumes and close the ethanol bottle immediately after use.
4	Column loading, washing, flow-through disposal and elution	Exposure to chemical buffer waste, ethanol-containing waste, and biological residues. Cross-contamination between samples may occur.	Serious	Possible	Hazardous	Keep tubes upright and work slowly. Do not mix kit-buffer waste with bleach unless compatibility has been confirmed, because some DNA extraction buffers may contain chemicals that can react dangerously with strong oxidizers.
5	Measure concentration using Nanodrop	Small-volume sample contact with the instrument surface, possible contamination of the instrument.	Mild	Not very likely	Hazardous	Avoid touching the measuring surface with pipette tips. Clean the measurement surface before and after use according to instrument instructions. Dispose of tips as contaminated lab waste. Wear gloves.

	Yes/No	Comments:
Rules for working alone has been observed	**Yes**	Working alone is not recommended for inexperienced students.If working alone, you must know the emergency contact person, leak handling procedures, location of eyewash stations, and escape routes before you begin.
The possibility of evacuation and ventilation/water/power failure has been taken into account	**Yes**	If power fails during centrifugation, do not open the centrifuge until the rotor has stopped. If ventilation fails, stop handling ethanol or irritating buffers and close all reagent containers.
Environmental issues have been considered	**Yes**	Waste must be disposed of according to EU chemical, biological and GMO waste procedures.
Special risk assessment for pregnant staff has been done	**Yes**	Pregnant individuals should be aware of irritating or harmful reagent buffers, ethanol exposure, and handling of biological/GMO materials.

References:

Plasmid Miniprep for Plasmid Isolation protocol

Ethanol 96–99% safety data sheet (Greenergy) / standard CLP hazard information.

Date: 2026-06-09

Risk assessment made by:

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Risk assessment checked by:

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1) AFS 2011:19 Chemical Hazard in the Working Environment, provisions (amanded and reprinted in 2014:5; 2014:43; 2017:4; 2018:2; 2019:9)

2) Lag (2010:1011) om brandfarliga och explosiva varor (LBE)

3) MSBFS 2020:1 föreskrifter om hantering av brandfarlig gas och brandfarliga aerosoler

Last updated 2021-12-20