

**NOTIFICATION FORM:**  
**RISK ASSESSMENT FOR EXPERIMENT WITH CHEMICALS PRODUCTS IN HAZARD  
CLASS E3 EN E4**

**Complete the form electronically, in consultation with your specialised HSE Contact chemical safety.**

**1. Identification of the division (users)**

Application/contact person: Van Craenenbroeck Renée

Tel: 016327419

E-mail address: [renee.van Craenenbroeck@chem.kuleuven.be](mailto:renee.van Craenenbroeck@chem.kuleuven.be)

Division: Biochemistry, Molecular and Structural Biology Section

Storeroom code<sup>1</sup>: GBM1 - Afdeling Biochemie, Moleculaire en Structurele Biologie - Practicum

Head: Marc De Maeyer

Head of lab: Johan Robben

**2. Identification of the experiment**

**Title**(name): GeneJet PCR purification Kit

Start date: 20/02/2012 Planned end date: continuous

- New experiment  
 Existing experiment without prior risk assessment  
 Modification/expansion of an existing experiment with prior risk assessment

This modification/expansion concerns (please indicate and describe in the form):

- persons  
 rooms of the experiment  
 chemicals products  
 other risks  
 prolongation

File number or reference number previous advice:  (if known)

If HSE FILE available:

experiment in the context of an existing activity

Give the number of the activities: 695 CO2 - G0057A Geïntegreerd practicum

This RA deals with a new activity (in consultation with specialised HSE Contact and head of division<sup>1</sup>): false

Give the title of the new activity for the HSE-file:

Continuous tests (**unattended** activity within or outside working hours)

<sup>1</sup> <https://admin.kuleuven.be/vgm/intranet/doc/antenne/antennemagazijncodes.xlsx/view><sup>1</sup>

**Description of the chemicals used (or formed)\***

Product name	Cas number	Physical state (solid/liquid/ gas)	Quantity used	Concentration used	Chemical hazard class (E4/E3/E2/E1)
1. Guanidinium thiocyanate	593-84-0	solid	Proprietary formulation	In binding buffer (proprietary formulation)	E4 without
2. ethanol	64-17-5	liquid	225 mL/year	Add to wash buffer (proprietary formulation)	E3
3. isopropanol	67-63-0	liquid	1 mL/year	100%	E3
4. Acetic acid	64-19-7	liquid	1 mL/year	Adjust pH	E3

\* If possible, replace highly hazardous products or processes by less hazardous ones !

**Location of experiment**

Building	Room	Description of subactivity (eg. preparation, experiment, follow-up, measurement,...)	Room specifications
492.21	00.21	1. experiment	<input checked="" type="checkbox"/> within your own division <input type="checkbox"/> allocated to another division

\* If experiments are conducted in a room allocated to another division, please send also the notification form to this head of division (in copy).

**Persons who conducting the experiment or for a practical the supervisors**

Name – first name	Birth date	Staff category
Van Craenenbroeck Renée	12/03/1985	<input checked="" type="checkbox"/> KU <input type="checkbox"/> Student KU <input type="checkbox"/> UZ <input type="checkbox"/> VIB <input type="checkbox"/> Externals:
De Wever Veerle	16/05/1977	<input checked="" type="checkbox"/> KU <input type="checkbox"/> Student KU <input type="checkbox"/> UZ <input type="checkbox"/> VIB <input type="checkbox"/> Externals:
PhD students from the division Biochemistry, Molecular and Structural Biology Section		<input checked="" type="checkbox"/> KU <input checked="" type="checkbox"/> Student KU <input type="checkbox"/> UZ <input type="checkbox"/> VIB <input type="checkbox"/> Externals:

**3. Description experiment and risk assessment**

**Description of handling and techniques:**

Number* of sub- experiment	Description of handling and techniques	Equipment used	Numbers** of products used
1	For DNA purification we will use the "GeneJet PCR Purification Kit" from Fermentas. The PCR mixture containing DNA is combined with the binding buffer and added to a purification column. A chaotropic agent in the binding buffer denatures proteins and promotes DNA binding to the silica. Impurities are removed with a wash step and DNA is eluted from the column with the elution buffer.	Lab coat; safety glasses and gloves	1 (binding buffer), 2 (wash buffer), 3 and 4

\* Number of the subactivity as indicated under "Location of experiment"

\*\* Number of the chemicals as indicated in "Description of the chemicals used (or formed)"

**Frequency of the experiment:**

- Daily  
 Weekly  
 Monthly  
 Less than monthly

**Optionally, more information about the experiment can be added (eg. reaction scheme)**

**Risks associated with the chemicals**

**Before handling chemicals, identify their hazards (R or H and S or P phrases)!**

These can be found in the K.U.Leuven database of hazardous substances (via KULoket, General, Hazardous materials) or in the manufacturer's safety data sheets.

In the table below, indicate the hazards of the products in risk class E3 and E4.

Name of chemical	Guanidinium thiocyanate	ethanol	isopropanol	Acetic acid			
<b>Explosion and fire hazard</b>							
Extremely or highly flammable (H220, H222, H224, H228, H225) / (R11, R12)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flammable gas, aerosol, solid (H221, H223, H228)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self heating, may catch fire (H251, H252)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire, explosive – projection hazard (H204, H202, H203), Mass explode in fire (H205)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explosive (EUH001, EUH006, H200, H201) / (R1, R2, R3, R5) + combustible materials (H271, H272) / (R9) + T <sup>+</sup> (H240, H241), sealed and T <sup>+</sup> (EUH044) / (R44)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flammable vapour-air mixture (EUH018)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explosive peroxides (EUH019)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Incompatible with water (EUH014, H260) / (R14, R15)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Catches fire spontaneously if exposed to air (H250)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explosive + metals (R4) + O <sub>2</sub> (R6)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Incompatible with oxidizing materials (R16)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unstable product (R17, R18, R19)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Acute health hazard</b>							
Highly toxic (H300, H330, H310) / (R26, R27, R28) + acid (EUH032) / (R32) Toxic (H311, H331, EUH070) / (R23, R24) + water (EUH029) / (R29) + acid (EUH031) / (R31)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Severe burns (H314) / (R35)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Long-term health hazard</b>							
Carcinogenic or possible carcinogenic (H350, H350i, H351) / (R40, R45, R49)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teratogenic (H361d, H360D) / (R61, R63) and harmful to fertility (H361f, H360F) / (R60, R62), both hazards (H361fd, H360FD, H360Df, H360Fd)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mutagenic (H341, H340) / (R46)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Damage to certain organs (H371, H372, H370) through prolonged or repeated exposure (H373)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Severe irreversible effects (possible) (R39, R68), Health damage after prolonged exposure (R48)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional remarks for certain products:

### Other risks associated with the experiment

- Burning, freezing ( high or low temperatures,  cryogenic materials, ...)
   
 Implosion, explosion ( high pressure,  low pressure,  underpressure, ...)
   
 Fire ( ovens,  heating spirals,  bunsen burner,  oil baths, ...)
   
 Non-ionizing radiation ( NMR,  lasers,  UV-lamps, ...)
   
 Elektrocution ( unprotected outlets,  humid environment,  high voltage, ...)
   
 Unattended operation ( remote room,  outside working hours, ...)
   
 Risk of falling ( set-ups at height,  at height,  hard to reach places, ...)
   
 Biosafety risk ( pathogenic  $\mu$ -organisms,  GGO,  cells,  blood,  laboratory animals, ...)
   
 Ionizing radiation (X-rays, isotopes, ...)
   
 In case of a serious incident, asking for help may NOT be possible (ex. Use of toxic gasses or vapours, risk of explosion, presence of inert gases in the lab, ...)
   
 Other:

### Precautionary measures

Number of subexperiment*	1	2	3	4	5
<b>Collective protective equipment</b>					
- Closed system	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Fume cabinet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Local ventilation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- General ventilation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Safety screen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Waste containers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Personal protective equipment</b>					
- Laboratory coat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Safety glasses	<input checked="" type="checkbox"/>	Choose an item	Choose an item	Choose an item	Choose an item
	safety spectacles (artno. 18042)				
- Gloves:	<input checked="" type="checkbox"/>	Choose an item	Choose an item	Choose an item	Choose an item
	Safety gloves nitrile (M artno.15929, L artno. 15930, XL artno. 15931)				
- Masks:	Choose an item	Choose an item	Choose an item	Choose an item	Choose an item
- Disposable cleanroom cap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Specific precautionary measures</b>					
<input type="checkbox"/>	checking the functioning of the fume cabinet				
<input type="checkbox"/>	checking glassware for cracks				
<input type="checkbox"/>	attaching clamp rings to cooling hoses				
<input type="checkbox"/>	overpressure protection				
<input type="checkbox"/>	presence of a fire extinguisher for metal fires (Class Dextinguisher)				
<input type="checkbox"/>	presence of an oxygen pack (required when handling cyanides)				
<input type="checkbox"/>	detector alarm when handling toxic or combustible gasses				
<input type="checkbox"/>	presence of a gas mask with specific filters (intervention)				
<input type="checkbox"/>	presence of a calcium gluconate ointment (handling hydrogen acid)				

presence of an intervention kit *i.e.*

Check the **Hazardous Laboratory Chemicals Disposal Guide**

completing and submitting the continuous tests form:

<https://admin.kuleuven.be/vgm/intranet/EN/Documents/unattendedexp.doc>

check for incompatible reagent combinations in the **Incompatibility table** available via

<https://www.groupware.kuleuven.be/sites/depchemrisico/Safety%20information/Incompatibility%20table.pdf>

check for incompatible reagent combinations: **Bretherick's Handbook of Reactive Chemical Hazards**

[http://metalib.libis.be:8331/V/?func=find-db-info&doc\\_num=000002419](http://metalib.libis.be:8331/V/?func=find-db-info&doc_num=000002419)

Applying the Code of Good Laboratory Practice

<https://admin.kuleuven.be/vgm/intranet/ChemischeVeiligheidCodeGoedeLabopraktijken.html> )

Internal training and guidance

Selective waste collection – chemical waste

#### Special precautionary measures in case of failure

Describe the actions needed in case of emergency (e.g. malfunctioning of electricity, ventilation, water supply, gas supply, compressed air, ...)

\* Number of the subexperiment as indicated under "Location of the experiment"

#### The experiment may not start, if all the precautionary measures can't be applied!

Personal protective equipment can be obtained via this request form:

<https://admin.kuleuven.be/vgm/intranet/EN/Documents/requestformindividualprotectiveequipment.doc>

#### Chemical waste

Indicate the waste category of each waste fraction.

Waste fraction	Waste category	Available container
<b>If pure substances:</b>		
Solid waste (tips, tubes, ...)	<input type="checkbox"/> 1 - <input type="checkbox"/> 2 - <input type="checkbox"/> 3 - <input type="checkbox"/> 4 - <input type="checkbox"/> 5 - <input type="checkbox"/> 6 - <input checked="" type="checkbox"/> Other : Cordi box	<input checked="" type="checkbox"/>
	<input type="checkbox"/> 1 - <input type="checkbox"/> 2 - <input type="checkbox"/> 3 - <input type="checkbox"/> 4 - <input type="checkbox"/> 5 - <input type="checkbox"/> 6 - <input type="checkbox"/> Other	<input type="checkbox"/>
<b>If mixtures:</b>		
Main component :isopropanol with binding buffer	<input type="checkbox"/> 1 - <input type="checkbox"/> 2 - <input checked="" type="checkbox"/> 3 - <input type="checkbox"/> 4 - <input type="checkbox"/> 5 - <input type="checkbox"/> 6 - <input type="checkbox"/> Other	<input checked="" type="checkbox"/>
Main component :ethanol in wash buffer	<input type="checkbox"/> 1 - <input type="checkbox"/> 2 - <input checked="" type="checkbox"/> 3 - <input type="checkbox"/> 4 - <input type="checkbox"/> 5 - <input type="checkbox"/> 6 - <input type="checkbox"/> Other	<input checked="" type="checkbox"/>
Main component : with	<input type="checkbox"/> 1 - <input type="checkbox"/> 2 - <input type="checkbox"/> 3 - <input type="checkbox"/> 4 - <input type="checkbox"/> 5 - <input type="checkbox"/> 6 - <input type="checkbox"/> Other	<input type="checkbox"/>
<b>Other:</b>		
	<input type="checkbox"/> 1 - <input type="checkbox"/> 2 - <input type="checkbox"/> 3 - <input type="checkbox"/> 4 - <input type="checkbox"/> 5 - <input type="checkbox"/> 6 - <input type="checkbox"/> Other	<input type="checkbox"/>

Comments / questions:

#### Deliver this form to your specialised HSE-contact.

The specialised HSE-contact sends this notification to the HSE-Department if products of Class E4 with clearance are involved.

X