

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: Ingmar Claes
Tel: 016376850 & 016327419
E-mail address: ingmar.claes@biw.kuleuven.be

Division: Biochemistry, Molecular and Structural Biology Section
Storeroom code¹: GBM1 - Afdeling Biochemie, Moleculaire en Structurele Biologie - Johan Robben
Head: Marc De Maeyer
Head of lab: Johan Robben

2. Identification of the experiment

Title(name): PCR

Start date: 01/07/2013

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: 615 -- OG Eiwitinteracties -- DNA/RNA-manipulaties

This RA deals with a new activity (in consultation with specialised HSE Contact and head of division¹): false

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

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

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

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. DreamTaq PCR buffer (a proprietary formulation which contains KCl and (NH ₄) ₂ SO ₄ and MgCl ₂)	77-86-1; 64-19-7; 127-08-2; 142-72-3; /	liquid	1 mL/year	Proprietary formulation	E3
2. DreamTaq polymerase in storage buffer (Tris-HCl; potassium chloride; EDTA; DTT; Nonidet P40; Tween 20 and glycerol)	/; 77-86-1; 7647-01-0; 7447-40-7; 60-00-4; 3483-12-3; 9036-19-5; 9005-64-5; 56-81-5	liquid	0.05 mL/year	5 U/microL DreamTaq; 20 mM Tris-HCl (pH 8.0), 1 mM DTT, 0.1 mM EDTA, 100 mM KCl, 0.5% (v/v) Nonidet P40, 0.5% (v/v) Tween 20 and 50% (v/v) glycerol	E3
3. dNTP mix in MQ water: ATP; GTP; TTP; CTP	987-65-5; 36051-31-7; 18423-43-3; /				E0
4. Primers in MQ water	/				E0

* 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
492.11	02.67	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
Ingmar Claes	04/05/1984	<input checked="" type="checkbox"/> KU <input type="checkbox"/> Student KU <input type="checkbox"/> UZ <input type="checkbox"/> VIB <input type="checkbox"/> Externals:
Students from the IGEM team; 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	Experiment: DNA is amplified via PCR.	Lab coat and safety glasses (gloves) Thermal cyclers	1, 2, 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	Acetic acid	Hydrogen Chloride					
Explosion and fire hazard							
Extremely or highly flammable (H220, H222, H224, H228, H225) / (R11, R12)	<input type="checkbox"/>	<input type="checkbox"/>	<input 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 ⁺ (H240, H241), sealed and T ⁺ (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 ₂ (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"/>
Acute health hazard							
Highly toxic (H300, H330, H310) / (R26, R27, R28) + acid (EUH032) / (R32) Toxic (H311, H331, EUH070) / (R23, R24) + water (EUH029) / (R29) + acid (EUH031) / (R31)	<input 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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Long-term health hazard							
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 μ -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
Collective protective equipment					
- 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 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"/>
Personal protective equipment					
- Laboratory coat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Safety glasses	safety spectacles (artno. 18042)	Choose an item	Choose an item	Choose an item	Choose an item
- Gloves:	Choose an item	Choose an item	Choose an item	Choose an item	Choose an item
- 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"/>
Specific precautionary measures					
<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)					
<input type="checkbox"/> presence of an intervention kit <i>i.e.</i>					
<input type="checkbox"/> Check the Hazardous Laboratory Chemicals Disposal Guide					
<input type="checkbox"/> completing and submitting the continuous tests form: https://admin.kuleuven.be/vgm/intranet/EN/Documents/unattendedexp.doc					
<input type="checkbox"/> 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
- 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
<i>If pure substances:</i>		
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"/>
<i>If mixtures: /</i>		
<i>Other: /</i>		

Comments / questions: **In this experiment is there no liquid waste. Everything is used in the following experiments.**

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
