THE UNIVERSITY OF WESTERN ONTARIO
BIOHAZARDOUS AGENTS REGISTRY FORM
Approved Biohazards Subcommittee: September 25, 2009
Biosafety Website: www.uwo.ca/humanresources/biosafety/

This form must be completed by each Principal Investigator holding a grant administered by the University of Western Ontario or in charge of a laboratory/facility where the use of Level 1, 2 or 3 biohazardous agents is described in the laboratory or animal work proposed. The form must also be completed if any work is proposed involving animals carrying zoonotic agents infectious to humans or involving plants, fungi, or insects that require Public Health Agency of Canada (PHAC) or Canadian Food Inspection Agency (CFIA) permits.

This form must be updated at least every 3 years or when there are changes to the biohazards being used.

Containment Levels will be established in accordance with Laboratory Biosafety Guidelines, 3rd edition, 2004, Public Health Agency of Canada (PHAC) or Containment Standards for Veterinary Facilities, 1st edition 1996, Canadian Food Inspection Agency (CFIA).

Completed forms are to be returned to Occupational Health and Safety, (OHS), (Support Services Building, Room 4190) for distribution to the Biohazard Subcommittee. For questions regarding this form, please contact the Biosafety Officer at extension 81135 or biosafety@uwo.ca. If there are changes to the information on this form (excluding grant title and funding agencies), contact Occupational Health and Safety for a modification form. See website: www.uwo.ca/humanresources/biosafety

PRINCIPAL INVESTIGATOR	Martin J. Stillman
SIGNATURE	
DEPARTMENT	Chemistry
ADDRESS	Chemistry Bld 064
PHONE NUMBER	X86358
EMERGENCY PHONE NUMBER(S)	519-472-0052
EMAIL	Martin.Stillman@uwo.ca

Location of experimental work to be carried out: Building(s) ____Chemistry Building_____ Room(s)__017_

*For work being performed at Institutions affiliated with the University of Western Ontario, the Safety Officer for the Institution where experiments will take place must sign the form prior to its being sent to the University of Western Ontario Biosafety Officer (See Section 12.0, Approvals).

FUNDING AGENCY/AGENCIES:_____NSERC_____
GRANT TITLE(S): ___ Bioinorganic Chemistry of Metallothioneins, Phthalocyanines and Porphyrins

PLEASE ATTACH A BRIEF DESCRIPTION OF YOUR WORK THAT EXPLAINS THE BIOHAZARDS USED AND HOW THEY WILL BE USED. PROJECTS SUBMITTED WITHOUT A SUMMARY WILL NOT BE REVIEWED. A GRANT SUMMARY PAGE MAYBE ADEQUATE IF IT PROVIDES SUFFICIENT DETAIL ABOUT EACH BIOHAZARD USED.

Names of all personnel working under Principal Investigators supervision in this location:

Thanh Ngu	Sandra Krecisz
Duncun Sutherland	Kristine King
Micheal Tiedemann	Arthur Lu
Tyler Pinter	Lindsay Jackson

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

1.0 Microorganisms

1.1 Does your work involve the use of biological agents? XYES O NO
(including but not limited to bacteria and other microorganisms, viruses, prions, parasites or pathogens of plant or animal origin)? If no, please proceed to Section 2.0

Do you use microorganisms that require a permit from the CFIA? O YES X NO
If YES, please give the name of the species. _____
What is the origin of the microorganism(s)? _____
Please describe the risk (if any) of escape and how this will be mitigated:

_____
_____
_____

Please attach the CFIA permit.
Please describe any CFIA permit conditions:

_____
_____
_____

1.2 Please complete the table below:

Name of Biological agent(s)*	Is it known to be a human pathogen? YES/NO	Is it known to be an animal pathogen? YES/NO	Is it known to be a zoonotic agent? YES/NO	Maximum quantity to be cultured at one time? (in Litres)	Source/ Supplier	PHAC or CFIA Containment Level
E. coli BL21 (DE3)	X Yes O No	X Yes O No	O Yes X No	6L	???	X 1 O 2 O 3
	O Yes O No	O Yes O No	O Yes O No			O 1 O 2 O 3
	O Yes O No	O Yes O No	O Yes O No			O 1 O 2 O 3
	O Yes O No	O Yes O No	O Yes O No			O 1 O 2 O 3

*Please attach a Material Safety Data Sheet or equivalent from the supplier.

2.0 Cell Culture

2.1 Does your work involve the use of cell cultures? X YES O NO
If no, please proceed to Section 3.0

2.2 Please indicate the type of primary cells (i.e. derived from fresh tissue) that will be grown in culture:

Cell Type	Is this cell type used in your work?	Source of Primary Cell Culture Tissue	AUS Protocol Number
Human	O Yes X No		Not applicable
Rodent	O Yes X No		
Non-human primate	O Yes X No		
Other (specify) E. coli BL21 (DE3)	X Yes O No	???	

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

2.3 Please indicate the type of established cells that will be grown in culture in:

Cell Type	Is this cell type used in your work?	Specific cell line(s)*	Supplier / Source
Human	O Yes X No		
Rodent	O Yes X No		
Non-human primate	O Yes X No		
Other (specify) E. coli	X Yes O No	ER2566 BL21(DE3)	INVITROGEN

*Please attach a Material Safety Data Sheet or equivalent from the supplier. (For more information, see www.atcc.org) ATTACHED

2.4 For above named cell types(s) indicate PHAC or CFIA containment level required O 1 O 2 O 3

3.0 Use of Human Source Materials

3.1 Does your work involve the use of human source materials? O YES X NO
If no, please proceed to Section 4.0

3.2 Indicate in the table below the Human Source Material to be used.

Human Source Material	**Source/Supplier /Company Name**	**Is Human Source Material Infected With An Infectious Agent? YES/NO**	**Name of Infectious Agent (If applicable)**	**PHAC or CFIA Containment Level (Select one)**
Human Blood (whole) or other Body Fluid		O Yes O No O Unknown		O 1 O 2 O 3
Human Blood (fraction) or other Body Fluid		O Yes O No O Unknown		O 1 O 2 O 3
Human Organs or Tissues (unpreserved)		O Yes O No O Unknown		O 1 O 2 O 3
Human Organs or Tissues (preserved)		Not Applicable		Not Applicable

4.0 Genetically Modified Organisms and Cell lines

4.1 Will genetic modifications be made to the microorganisms, biological agents, or cells described in Sections 1.0 and 2.0? X YES O NO If no, please proceed to Section 5.0

4.2 Will genetic modification(s) involving plasmids be done? X YES, complete table below O NO

Bacteria Used for Cloning *	Plasmid(s) *	Source of Plasmid	Gene Transfected	Describe the change that results
E. coli ER2566 E. coli BL21(DE3)	*Pet-29a*	*???*	*Metallothionein and Isd heme protien*	*Overexpress recombinant proteins*

* Please attach a Material Data Sheet or equivalent if available.

4.3 Will genetic modification(s) involving viral vectors be made? O YES, complete table below X NO

Virus Used for Vector Construction	Vector(s) *	Source of Vector	Gene(s) Transduced	Describe the change that results

* Please attach a Material Safety Data Sheet or equivalent.

4.4 Will genetic sequences from the following be involved?

- HIV O YES, please specify _____ X NO
- HTLV 1 or 2 or genes from any Level 1 or Level 2 pathogens O YES, specify _____ X NO
- SV 40 Large T antigen O YES X NO
- E1A oncogene O YES X NO
- Known oncogenes O YES, please specify _____ X NO
- Other human or animal pathogen and or their toxins O YES, please specify _____ X NO

4.5 Will virus be replication defective? O YES X NO

4.6 Will virus be infectious to humans or animals? O YES X NO

4.7 Will this be expected to increase the containment level required? O YES X NO

5.0 Human Gene Therapy Trials NO HUMAN EXPERIMENTS

5.1 Will human clinical trials be conducted involving a biological agent? O YES X NO
(including but not limited to microorganisms, viruses, prions, parasites or pathogens of plant or animal origin)
If no, please proceed to Section 6.0

5.2 If YES, please specify which biological agent will be used: _____
Please attach a full description of the biological agent.

5.2 Will the biological agent be able to replicate in the host? O YES X NO

5.3 How will the biological agent be administered? _____

5.4 Please give the Health Care Facility where the clinical trial will be conducted:_____

5.5 Has human ethics approval been obtained? O YES, number: _____ O NO X PENDING

6.0 Animal Experiments NO ANIMAL EXPERIMENTS

6.1 Will live animals be used? O YES X NO If no, please proceed to section 7.0

6.2 Name of animal species to be used_____

6.3 AUS protocol # _____

6.4 Will any of the agents listed in section 4.0 be used in live animals O YES, specify: _____ O NO

6.5 Will the agent(s) be shed by the animal: O YES O NO, please justify:

_____

_____

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

7.0 Use of Animal species with Zoonotic Hazards NO ANIMALS USED

7.1 Will any of the following animals or their organs, tissues, lavages or other body fluids including blood be used?

- Pound source dogs O YES O NO
- Pound source cats O YES O NO
- Cattle, sheep or goats O YES O NO
- Non-human primates O YES, please specify species _____ O NO
- Wild caught animals O YES, please specify species & colony # _____ O NO
- Birds O YES O NO
- Others (wild or domestic) O YES, please specify _____ O NO

8.0 Biological Toxins

8.1 Will toxins of biological origin be used? O YES X NO If no, please proceed to Section 9.0

8.2 If YES, please name the toxin(s)_____
Please attach information, such as a Material Safety Data Sheet, for the toxin(s) used.

8.3 What is the LD_{50} (specify species) of the toxin_____

8.4 How much of the toxin is handled at one time*? _____

8.5 How much of the toxin is stored*? _____

8.6 Will any biological toxins be used in live animals? O YES, Please provide detais:_____ O NO

*For information on biosecurity requirements, please see:
http://www.uwo.ca/humanresources/docandform/docs/healthandsafety/biosafety/Biosecurity_Requirements.pdf

9.0 Insects Requiring CFIA Permits

9.1 Do you use insects that require a permit from the CFIA? O YES X NO
If no, please proceed to Section 10.0

9.2 If YES, please give the name of the species. _____

9.3 What is the origin of the insect? _____

9.4 What is the life stage of the insect? _____

9.5 What is your intention? O Initiate and maintain colony, give location: _____
O "One-time" use, give location: _____

9.6 Please describe the risk (if any) of escape and how this will be mitigated:
_____
_____
_____

9.7 Please attach the CFIA permit.

9.8 Please describe any CFIA permit conditions:
_____
_____

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

10.0 Plants Requiring CFIA Permits

10.1 Do you use plants that require a permit from the CFIA? O YES X NO
If no, please proceed to Section 11.0

10.2 If YES, please give the name of the species. _____

10.3 What is the origin of the plant? _____

10.4 What is the form of the plant (seed, seedling, plant, tree...)? _____

10.5 What is your intention? O Grow and maintain a crop O "One-time" use

10.6 Do you do any modifications to the plant? O YES O NO
If yes, please describe: _____
_____

10.7 Please describe the risk (if any) of loss of the material from the lab and how this will be mitigated:
_____
_____
_____

10.8 Is the CFIA permit attached? O YES O NO
If NO, please forward the permit to he Biosafety Officer when available.

10.9 Please describe any CFIA permit conditions:
_____
_____
_____

11.0 Import Requirements

11.1 Will any of the above agents be imported? O YES, please give country of origin_____
If no, please proceed to Section 12.0 X NO

11.2 Has an Import Permit been obtained from HC for human pathogens? O YES O NO

11.3 Has an import permit been obtained from CFIA for animal or plant pathogens? O YES O NO

11.4 Has the import permit been sent to OHS? O YES, please provide permit # _____ O NO

12.0 Training Requirements for Personnel Named on Form

All personnel named on the above form who will be using any of the above named agents are required to attend the following training courses given by OHS:

- Biosafety
- Laboratory and Environmental/Waste Management Safety
- WHMIS (Western or equivalent)
- Employee Health and Safety Orientation

As the Principal Investigator, I have ensured that all of the personnel named on the form who will be using any of the biohazardous agents in Sections 1.0 to 9.0 have been trained.

SIGNATURE _____

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

13.0 Containment Levels

11.1 For the work described in sections 1.0 to 9.0, please indicate the highest HC or CFIA Containment Level required. X 1 O 2 O 3

13.2 Has the facility been certified by OHS for this level of containment?

O YES, permit # if on-campus_____

O NO, please certify

X NOT REQUIRED for Level 1 containment

14.0 Procedures to be Followed

14.1 As the Principal Investigator, I will ensure that this project will follow the Western Biosafety Guidelines and Procedures Manual for Containment Level 1 & 2 Laboratories (and the Level 3 Facilities Manual for Level 3 projects). I will ensure that UWO faculty, staff and students working in my laboratory have an up-to-date Hazard Communication Form, found at http://www.wph.uwo.ca/

SIGNATURE _____ Date: 2009 Dec 06

14.2 Please describe additional risk reduction measures will be taken beyond containment level 1, 2, or 3 measures, that are unique to this agent.

_____

_____

_____

14.3 Please outline what will be done if there is an exposure to the biohazards listed, such as a needlestick injury:

Exposure to E. coli can occur because of handling or accidental ingestion (most likely). E. coli could make the individual very ill with gastroenteritis. Exposure requires treatment by a physician because the onset of symptoms can take several days. We only use sharp needles with the mass spectrometer on purified protein samples. We do not use sharp needles with E. coli. Therefore, the action to be taken has to be to clean the wound with hot soapy water and report to OHS for advice as usual in an accident.

15.0 Approvals

UWO Biohazard Subcommittee: SIGNATURE: _____

Date:_____

Safety Officer for Institution where experiments will take place: SIGNATURE:_____

Date:_____

Safety Officer for University of Western Ontario (if different from above): SIGNATURE:_____

Date:_____

Approval Number: _____ Expiry Date (3 years from Approval): _____

Special Conditions of Approval:

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

TECHNIQUES AND DESCRIPTION

IN EXPERIMENTS WITH THE Isd PROTEIN: we analyze heme bindi9ng by mass spectrometry to unambiguously determine the products or lack of products when a heme-donor (e.g. holo-Isd protein) and heme-accepter (e.g. apo-Isd protein) are mixed. Previous reports of the mass spectral data have shown that the heme-free native apo-protein can be readily distinguished from the heme-free denatured apo-protein and the native, heme-bound holo-proteins. Extending this technology, we now demonstrate, for the first time, direct evidence for an ordered, multi-protein, heme transfer system between Gram-positive bacterial surface Isd proteins. Key to these experiments using the ESI-MS technique is that not only do the measured data indicate possible changes in folding as a function of heme binding, but when mixtures are measured, the data show all components in their relative fractions – so that in heme exchange reactions, heme binding between the very similar NEAT-based Isd proteins can be clearly identified providing unambiguous information on the heme transfer.

IN EXPERIMENTS WITH METALLOTHIOENINS: We use spectroscopic probes for equilibrium studies during the step-wise, metal-by-metal metalation have established that metallothionein binds readily (fast) and reproducibly (the same CD spectrum is obtained no matter how the product is prepared) to a wide range of metals. Metalation titrations monitored by CD spectroscopy have demonstrated that while end-points can be associated with different "magic" numbers for different metals, the spectroscopic data also indicated that metallothionein can exist with both fewer and more metals than these "magic" numbers. Therefore, simple alignment of the amount of metal added with a maximum in a spectroscopically determined signal will only correctly identify the number of metals bound when essentially no free metal exists, a situation only found with the very high K_B values normally associated with specific binding sites.

Protein expression and purification. E.coli RP523 cells harboring recombinant plasmids were grown at 30°C in Luria-Bertani broth (LB; Difco) containing ampicillin (100μg/ml) and L-arabinose (0.2%). After overnight incubation, cells were harvested and resuspended in binding buffer (20mM sodium phosphate, pH 7.4, 500mM NaCl, 10 mM imidazole). Cells were then ruptured in a French pressure cell and cell lysates were subjected to ultracentrifugation at 150,000 × *g* for 1 hr to remove insoluble material. Proteins were purified using a 1 ml HisTrap column (GE Healthcare) and an ÄKTA FPLC system with an elution buffer containing 20mM sodium phosphate, pH 7.4, 500mM NaCl, 500mM imidazole. Proteins were then desalted using a 5ml HiTrap Desalting Column (GE Healthcare). Thrombin was used to remove The 6xHis-tags were removed by incubation with thrombin (10U/mg protein; GE Healthcare) at room temperature for 16 hours and run through HisTrap column for final purification.

Hemin (Sigma) was dissolved in DMSO for estimation of solution concentrations. Hemin concentrations in DMSO were calculated using the extinction coefficients 10.74 $mM^{-1}\,cm^{-1}$ at 501 nm and 6.23 $mM^{-1}\,cm^{-1}$ at 624 nm. These values were determined using the pyridine hemochrome test as a reference, using ε_{526} = 16.99 $mM^{-1}\,cm^{-1}$ and ε_{526} = 16.99 $mM^{-1}\,cm^{-1}$ for pyridine hemochromE Protein concentrations were estimated using the extinction coefficients at 280 nm of 15.48 $mM^{-1}cm^{-1}$ for myoglobin, 15.93 $mM^{-1}cm^{-1}$ for NEAT-A and NEAT-B2, 18.49 $mM^{-1}\,cm^{-1}$ for NEAT-C, and 14.65 $mM^{-1}\,cm^{-1}$ for NEAT-H3. Due to the lack of tryptophan residues in IsdE, mass spectrometry was used to estimate protein concentrations using a NEAT domain sample as reference point. Protein samples in 1x PBS buffer were incubated with 1.5x molar excess hemin dissolved in DMSO. Samples were then concentrated to approximately 100 μM and purified using G-25 size exclusion chromatography. Mass spectra of collected samples were run to ensure that free heme was effectively removed.

ESI-MS sample preparation. Stock protein solutions in PBS were concentrated using centrifuge concentration tubes (Millipore) to approximately 100 μM. Buffer exchange to 20 mM ammonium formate (pH 7.3) was performed using G-25 size exclusion chromatography.

Heme transfer reactions. To monitor heme transfer between the two NEAT domains (NEAT-A and NEAT-C) and IsdE, the protein samples were mixed with an approximate 1.5x excess of the appropriate heme acceptor protein. The mixing times were varied from 10 m to 2 h. In all cases the spectra remained the same. To examine heme transfer from myoglobin, approximately 1.5x excess of each apo-NEAT domain was added to samples of ferric and ferrous myoglobin in 20 mM ammonium formate buffer. Samples were allowed to mix for 20 m and 24 h. No significant differences in the data measured following the two incubation periods.

invitrogen

One Shot® BL21(DE3) Chemically Competent *E. coli*
Cat. No. **C6000-03**

BL21(DE3) *E. coli* are ideal for use with bacteriophage T7 promoter-based expression systems (*e.g.*, pRSET, pCR®T7, and pET). BL21(DE3) carry the lambda DE3 lysogen. Recombinant proteins that are non-toxic to *E. coli* are generally expressed at higher levels in BL21(DE3) cells than in BL21(DE3)pLysS or BL21(DE3)pLysE. However, the basal expression levels of heterologous genes are significantly higher in BL21(DE3) than in BL21(DE3)pLysS or BL21(DE3)pLysE.

Manuals MSDS

Share your opinion!
Please log in to write a review.

Specifications

General Specifications
Material Safety Data Sheet (3)

General Specifications

Bacterial Strain:	BL21 Star™(DE3)
Blue-White Screening:	No
Brand:	One Shot®
Cloning Methylated DNA:	No
Competent Cell Type:	Chemically Competent
F' Episome (to make ssDNA):	Lacks F' Episome
Format:	One Shot
High Throughput Compatibility:	Not High Throughput-Compatible
Improves Plasmid Quality:	No
Product Size:	20 × 50 µl
Propagating ccdB Vectors:	Not for ccdB vector propagation
Reduces Recombination:	No
T1 Phage - Resistant (tonA):	No
Transformation Efficiency:	> 1x10^8
Transformation Efficiency Level:	Medium Efficiency (10^8-10^9 cfu/µg)

Material Safety Data Sheet (3) Top

460700 500149 54357

People who viewed this also viewed:

NEUROBASAL™ Medium (1X), liquid
Cat. No. 21103049
Unit Size 500 ml
Price (CAD) 59.00
Qty 1

B-27 Serum-Free Supplement (50X), liquid
Cat. No. 17504044
Unit Size 10 ml
Price (CAD) 100.00
Qty 1

Phosphate Buffered Saline (PBS) 7.2 (1X), liquid
Cat. No. 20012050
Unit Size 10 × 500 ml
Price (CAD) 211.00
Qty 1

Material Safety Data Sheet

Revision Date: 24-Mar-2008

Product code 500149
Product name BL21 (DE3) One Shot

Company/Undertaking Identification

INVITROGEN CORPORATON
5791 VAN ALLEN WAY
PO BOX 6482
CARLSBAD, CA 92008
760-603-7200

INVITROGEN CORPORATION
2270 INDUSTRIAL STREET
BURLINGTON, ONT
CANADA L7P 1A1
800-263-6236

GIBCO PRODUCTS
INVITROGEN CORPORATION
3175 STALEY ROAD P.O. BOX 68
GRAND ISLAND, NY 14072
716-774-6700

24 hour Emergency Response (Transport): 866-536-0631
301-431-8585
Outside of the U.S. ++1-301-431-8585

Hazardous/Non-hazardous Components

Glycerol	56-81-5	10-30

Emergency Overview
The product contains no substances which at their given concentration, are considered to be hazardous to health

Form
Liquid

Principle Routes of Exposure/ Potential Health effects

Eyes	No information available
Skin	No information available
Inhalation	No information available
Ingestion	No information available

Specific effects

Carcinogenic effects	No information available
Mutagenic effects	No information available
Reproductive toxicity	No information available
Sensitization	No information available

Target Organ Effects No information available

HMIS

Health	0
Flammability	0
Reactivity	0

Skin contact	Wash off immediately with plenty of water
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes
Ingestion	Never give anything by mouth to an unconscious person
Inhalation	Move to fresh air
Notes to physician	Treat symptomatically.

Suitable extinguishing media	Dry chemical
Special protective equipment for firefighters	Wear self-contained breathing apparatus and protective suit

Personal precautions	Use personal protective equipment
Methods for cleaning up	Soak up with inert absorbent material.

Handling	No special handling advice required
Storage	Keep in properly labelled containers

Occupational exposure controls

Exposure limits

Glycerol	15 mg/m³ total dust 5 mg/m³ respirable fraction	-	10 mg/m³	-

Engineering measures Ensure adequate ventilation, especially in confined areas

Personal protective equipment

Respiratory protection	In case of insufficient ventilation wear suitable respiratory equipment
Hand protection	Protective gloves
Eye protection	Safety glasses with side-shields
Skin and body protection	Lightweight protective clothing.
Hygiene measures	Handle in accordance with good industrial hygiene and safety practice
Environmental exposure controls	Prevent product from entering drains.

General Information

Form Liquid

Important Health Safety and Environmental Information

Boiling point/range	°C No data available	°F No data available
Melting point/range	°C No data available	°F No data available
Flash point	°C No data available	°F No data available
Autoignition temperature	°C No data available	°F No data available
Oxidizing properties	No information available	
Water solubility	No data available	

Stability	Stable under normal conditions.
Materials to avoid	No information available
Hazardous decomposition products	No information available
Polymerization	Hazardous polymerisation does not occur.

Acute toxicity

Glycerol	12600 mg/kg (Rat)	10 g/kg (Rabbit)	570 mg/m³ (Rat)

Principle Routes of Exposure/ Potential Health effects

Eyes	No information available
Skin	No information available
Inhalation	No information available
Ingestion	No information available

Specific effects

Carcinogenic effects	No information available
Mutagenic effects	No information available
Reproductive toxicity	No information available

Sensitization	No information available

Target Organ Effects No information available

Ecotoxicity effects	No information available.
Mobility	No information available.
Biodegradation	No information available.
Bioaccumulation	No information available

Dispose of in accordance with local regulations

IATA

Proper shipping name	Not classified as dangerous in the meaning of transport regulations
Hazard Class	No information available
Subsidiary Class	No information available
Packing group	No information available
UN-No	No information available

International Inventories

Glycerol	Listed	Listed	Listed	Listed	-	Listed

U.S. Federal Regulations

SARA 313
This product is not regulated by SARA.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contains HAPs.

U.S. State Regulations

Glycerol	Listed	-	Listed	-	Listed

California Proposition 65
This product does not contain chemicals listed under Proposition 65

WHMIS hazard class:
Non-controlled

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR

[redacted]

This material is sold for research and development purposes only. It is not for any human or animal therapeutic or clinical diagnostic use. It is not intended for food, drug, household, agricultural, or cosmetic use. An individual technically qualified to handle potentially hazardous chemicals must supervise the use of this material.

The above information was acquired by diligent search and/or investigation and the recommendations are based on prudent application of professional judgment. The information shall not be taken as being all inclusive and is to be used only as a guide. All materials and mixtures may be present unknown hazards and should be used with caution. Since Invitrogen Corporation cannot control the actual methods, volumes, or conditions of use, the Company shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein. THE INFORMATION IN THIS MSDS DOES NOT CONSTITUTE A WARRANTY, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTCULAR PURPOSE.

End of Safety Data Sheet

Material Safety Data Sheet

Revision Date: 06-Jun-2008

Product code 460700
Product name SOC Media

Company/Undertaking Identification

INVITROGEN CORPORATON
5791 VAN ALLEN WAY
PO BOX 6482
CARLSBAD, CA 92008
760-603-7200

INVITROGEN CORPORATION
5250 MAINWAY DRIVE
BURLINGTON, ONT
CANADA L7L 6A4
800-263-6236

GIBCO PRODUCTS
INVITROGEN CORPORATION
3175 STALEY ROAD P.O. BOX 68
GRAND ISLAND, NY 14072
716-774-6700

Hazardous/Non-hazardous Components
The product contains no substances which at their given concentration, are considered to be hazardous to health

Emergency Overview
The product contains no substances which at their given concentration, are considered to be hazardous to health

Form
Liquid

Principle Routes of Exposure/ Potential Health effects

Eyes	No information available
Skin	No information available
Inhalation	No information available
Ingestion	No information available

Specific effects

Carcinogenic effects	No information available
Mutagenic effects	No information available
Reproductive toxicity	No information available
Sensitization	No information available

Target Organ Effects No information available

HMIS

Health	No Information Available
Flammability	No Information Available
Reactivity	No Information Available

Skin contact	Wash off immediately with plenty of water
Eye contact	Rinse thoroughly with plenty of water, also under the eyelids.
Ingestion	Never give anything by mouth to an unconscious person
Inhalation	Move to fresh air
Notes to physician	Treat symptomatically.

Suitable extinguishing media	Dry chemical
Special protective equipment for firefighters	Wear self-contained breathing apparatus and protective suit

Personal precautions	Use personal protective equipment
Methods for cleaning up	Soak up with inert absorbent material.

Handling	No special handling advice required
Storage	Keep in properly labelled containers

Occupational exposure controls

Exposure limits
Engineering measures Ensure adequate ventilation, especially in confined areas

Personal protective equipment

Respiratory protection	In case of insufficient ventilation wear suitable respiratory equipment
Hand protection	Protective gloves
Eye protection	Safety glasses with side-shields
Skin and body protection	Lightweight protective clothing.

Hygiene measures	Handle in accordance with good industrial hygiene and safety practice
Environmental exposure controls	Prevent product from entering drains.

[redacted]

General Information

Form	Liquid

Important Health Safety and Environmental Information

Boiling point/range	°C No data available	°F No data available
Melting point/range	°C No data available	°F No data available
Flash point	°C No data available	°F No data available
Autoignition temperature	°C No data available	°F No data available
Oxidizing properties	No information available	
Water solubility	No data available	

[redacted]

Stability	Stable.
Materials to avoid	No information available
Hazardous decomposition products	No information available
Polymerization	Hazardous polymerisation does not occur.

[redacted]

Acute toxicity

Principle Routes of Exposure/ Potential Health effects

Eyes	No information available
Skin	No information available
Inhalation	No information available
Ingestion	No information available

Specific effects

Carcinogenic effects	No information available
Mutagenic effects	No information available
Reproductive toxicity	No information available
Sensitization	No information available

Target Organ Effects	No information available

[redacted]

Ecotoxicity effects	No information available.
Mobility	No information available.
Biodegradation	Inherently biodegradable.
Bioaccumulation	Does not bioaccumulate.

[redacted]

[redacted]

Dispose of in accordance with local regulations

[redacted]

IATA

Proper shipping name	Not classified as dangerous in the meaning of transport regulations
Hazard Class	No information available
Subsidiary Class	No information available
Packing group	No information available
UN-No	No information available

[redacted]

International Inventories

U.S. Federal Regulations

SARA 313
This product is not regulated by SARA.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contains HAPs.

U.S. State Regulations

California Proposition 65
This product does not contain chemicals listed under Proposition 65

WHMIS hazard class:
Non-controlled

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR

[redacted]

This material is sold for research and development purposes only. It is not for any human or animal therapeutic or clinical diagnostic use. It is not intended for food, drug, household, agricultural, or cosmetic use. An individual technically qualified to handle potentially hazardous chemicals must supervise the use of this material.

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End of Safety Data Sheet