HEADING

Title of Procedure: ***Preparation of Buffer-gradient Polyacrylamide Gel***[a] Revision Date: _____
Author (P.I., See Citation, Lab Investigator, Others):
Name: _____ Signature: _____
Name: _____ Signature: _____
Name: _____ Signature: _____
Reviewed by CHO/Safety Representative for Lab:
Name: _____ Signature: _____

SCOPE AND APPLICABILITY

- Department: _____
- Research Group: _____
- Lab Bldg., Room(s): _____
- Operation / Experiment: _____
- Material(s): _____
- Ventilation: ☐General room ☑Chemical fume hood ☐Biosafety cabinet (A/B3, B2, B1)
  ☐Snorkel Trunk ☐Glove box (BSC Class III)

MATERIALS AND HAZARDS

Principal Materials Used	Corrosive	Irritant	Sensitizer	Reproductive toxin	Acutely Toxic	Carcinogen	Flammable	Combustible	Water-Reactive	Shock-Sensitive	Pyrophoric	Oxidizer	Biotoxin	Other Comments:
Acrylamide		X		X	X	X	X							See below **1.**
N,N'-methylenebisacrylamide		X												See below **2.**
TEMED (N,N,N',N'-tetramethylethylenediamine)	X							X						
5X TBE														
Tris base		X												
Boric acid		X												See below **3.**
0.5M EDTA (pH 8.0)		X												
Ammonium persulfate	X	X										X		
Urea (ultrapure)		X												
Sucrose		X												
Bromophenol blue		X												
Potassium hydroxide	X	X			X									See below **4.**
Methanol		X					X							

MSDS attached: ☐ Yes ☑ No If not, explain: (e.g. MSDSs are available at the following location: shelf in Room 1234, Building. XYZ; electronically via EHS Department's Web page)

_____
_____

Describe equipment/instrumentation used to monitor/control hazards:

- Acrylamide, methylenebisacrylamide, and ammonium persulfate should be handled in a laboratory hood. No open bench work.
- Cover the working area with plastic-backed protective paper because it is almost impossible to pour the sequencing gels without dripping acrylamide solutions onto the bench.

MATERIALS AND HAZARDS (CONT.)

Other comments, Chemical hazards, Precautions:

1. Acrylamide is a potent neurotoxin and is absorbed through the skin. The effects of acrylamide are cumulative. Wear gloves and a mask when weighing powdered acrylamide. Although polyacrylamide is considered to be nontoxic, it should be handled with care because of possibility that it might contain small quantities of unpolymerized acrylamide (e.g. wear gloves and a mask when washing the pipette and the syringe). Periodically treat area where unpolymerized acrylamide is used with 1.6% potassium persulfate, then with 1.6% sodium metabisulfite. Let stand for 30 minutes, and then wash with plenty of water.
2. May affect central nervous system. Wear gloves and a mask when weighing powdered N,N'-methylenebidacrylamide.
3. May affect central nervous system, liver, and kidneys.
4. Highly corrosive. Causes severe burns to skin, eyes, respiratory tract, and gastrointestinal tract. Extremely destructive to all body tissues.

Special PPE Required:

☐ Safety glasses
☑ Goggles (chemical-splash goggles)
☑ Face Shield
☑ Chemical Resistant Apron/Smock/Lab Coat
☑ Protective Clothing (e.g. sleeves, footware, head cover)
☑ Gloves/Gauntlets
  ☐ Single
  ☑ Double
☑ Respirator (a half-face respirator with an organic vapor cartridge and particulate filter or better when handling chemical(s) without local or dedicated ventilation.)

Special Protective Clothing Required:

Protective Clothing	Nitrile	PVC (Vinyl)	PVA	Latex/Natural rubber	Neoprene	Butyl	Additional Specifications
Aprons/Lab coat/Smock							◆ PE, PVC ◆ Avoid traditional cotton-polyester white lab coat
Shoe Cover							◆ Impervious boots or PVC disposable shoe coverings are recommended.
Full Body Cover							
Head Cover							
Gloves/Gauntlets							◆ Gloves should be worn when preparing and handling the gel solutions. ◆ Gloves are for splash protection; not for immersion protection. ◆ Double-gloved is recommended given the diversity of chemical hazards and highly corrosive chemicals. It is recommended that two different glove types and colors be used for best protection. ◆ Immediately replace with new gloves when splash occurs.
Acrylamide	X	X			X	X	
N,N'-methylenebisacrylamide		X		X		X	
TEMED	X						
Boric acid	X				X	X	
0.5M EDTA (pH 8.0)				X			
Ammonium persulfate				X	X		
Urea (ultrapure)	X			X	X		
Bromophenol blue				X			
Potassium hydroxide	X				X	X	
Methanol						X	

NOTE: If special PPE and/or protective clothing is not required, standard PPE and protective clothing required in Part II of the Harvard University CHP must be utilized. See http://www.uos.harvard.edu/ehs/ih/CHP_Part_II.pdf or visit "EHS, Industrial Hygiene, Chemical Hygiene/Lab Safety, Manuals – Chemical Hygiene Plan – Part II."

SPECIAL PRECAUTIONS

- Permits: (e.g. FDA, ATF, other)_____
- Mgmt. Approval: _____
- Training: _____
- Medical Surveillance: _____
- Other: _____

PROCEDURE

Attach the enumerated or bulleted steps to be followed in performing the procedure. The steps should be detailed and should include prohibited activities and cautionary statements, where applicable.

SPECIAL EMERGENCY PROCEDURES

Also, see emergency flip chart titled "EHS Procedures and Response Guidelines," posted in each laboratory.

Fire/Evacuation: 0.5M EDTA, pH 8.0 may produce toxic fumes under fire conditions. Do not use water as extinguishing medium for ammonium persulfate.

Chemical Spill: _____

Medical Emergency: _____

Personal Exposure: _____

References:

a. J. Sambrook, E. F. Fritsch, T. Maniatis, "Denaturing Polyacrylamide Gels," *Molecular Cloning: A Laboratory Manual, 2nd ed.*, Cold Spring Harbor Laboratory Press, 1989, p13.45-53.