

# MATERIAL SAFETY DATA SHEET

## SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

<b>PRODUCT NAME:</b> PNA Probe + Hybridization Buffer		<b>DATE:</b> August 10, 2010	
TRADE NAME: PNA Probe + Hybridization Buffer GENERAL USE: Laboratory reagent CHEMICAL FAMILY: Organics PRODUCT DESCRIPTION: Colorless liquid, characteristic odor		AdvanDx	
<b>MANUFACTURER</b> AdvanDx, Inc.		DATE PREPARED: August 10, 2010	
TELEPHONE NUMBER (General Inquiries) <b>781-376-0009</b>		SUPERSEDES: September 3, 2009	
ADDRESS (NUMBER, STREET, P.O. BOX) 400 TradeCenter		<b>CHEMTEL 24-HOUR EMERGENCY TELEPHONE NUMBERS</b>	
(CITY, STATE AND ZIP CODE) Woburn, MA 01801-7476			
COUNTRY USA		<b>1-800-255-3924</b> North America (Toll Free)	<b>813-248-0585</b> International and Local Calls

## SECTION 2 - HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW**  
 Contact with liquid or vapors may cause mild to moderate skin irritation and severe eye irritation; absorption through skin is possible. Toxic by ingestion; causes gastro-intestinal distress. Inhalation may cause irritation to the respiratory tract, prolonged inhalation may result in ulcerations in the upper respiratory tract and nasal passages. Tris(hydroxymethyl) aminomethane (Trometamol), though present at less than 0.5%, may contribute to eye, skin and mucous membrane irritation if the solution is allowed to evaporate, thus concentrating the hazard. Product has little flammability.  
**Hazard symbols: T, Risk Phrases: R61, Safety Phrases: S2, S45, S53.**

US / CANADA HAZARD SYMBOL(S)  <b>None in USA</b>	EUROPEAN (GHS) HAZARD SYMBOLS  
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<b>HMIS HAZARD RATINGS</b>			
<b>0=Insignificant, 1=Slight, 2=Moderate, 3=High, 4=Extreme</b>	HEALTH:	2*	* - Reproductive Hazard
	FLAMMABILITY:	1	
	PHYSICAL HAZARD:	0	

**REQUIRED PERSONAL PROTECTIVE EQUIPMENT:**

<b>HMIS PERSONAL PROTECTIVE EQUIPMENT LETTER:</b>  B/G		Safety Glasses & Protective Gloves should be worn while handling product. When vapor levels cause irritation or exceed exposure limits, wear a organic vapor respirator. See Section 8 for full information.
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**RISK PHRASES**  
**R61 May cause harm to the unborn child.**

**SAFETY PHRASES**  
**S2 Keep out of the reach of children.**  
**S23 Do not breathe vapor.**  
**S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).**  
**S53 Avoid exposure — obtain special instructions before use.**

### POTENTIAL HEALTH EFFECTS

**INHALATION:**  
 Irritation of respiratory tracts/ nasal passages may occur; this is concentration-dependent, with headache, dizziness, nausea, vomiting and malaise.

**SKIN:**  
 Brief contact may cause slight irritation; prolonged contact may cause moderate reddening, swelling and possible necrosis. Possible absorption through skin.

**EYES:**  
 Contact causes severe pain and swelling with resultant lachrymation; chemical conjunctivitis may occur.

**INGESTION:**  
 Moderately toxic (See section 11). May cause headache, dizziness, diarrhea and general weakness. Target Organs : Central nervous system, blood, liver, kidney. **Suspect Teratogen.**

<b>CARCINOGENICITY:</b>			
NTP? <b>NO</b>	IARC MONOGRAPHS? <b>NO</b>	OSHA REGULATED? <b>NO</b>	
CALIFORNIA, Prop.65? <b>NO</b>		ESIS NOTATION? <b>NO</b>	

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### SECTION 3 - HAZARDOUS INGREDIENTS

Hazardous Components	% (by Weight)	CAS #	EINECS #	Hazard Symbol	RISK PHRASES (Full Text Section 15)
Formamide (a)	15-40	75-12-7	200-842-0	T+	R61
Tris(hydroxymethyl) aminomethane [Trometamol]	0.1-0.5	77-86-1	201-064-4	None	None

**(a) Ingredients included in the Canadian Ingredient Disclosure List are one of the four categories of ingredients whose identity and concentration must be disclosed on an MSDS if found in a controlled product above the concentration cut-off.**

**NOTES:** This Material Safety Data Sheet is prepared to comply with the United States Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29CFR1910.1200), the Canadian Workplace Hazardous Materials Information System (WHMIS), and European Union Directive 1997/2006/EEC (REACH). Hazard symbols and risk phrases are based on maximum listed concentration of each hazardous ingredient. Unlisted ingredients are not hazardous per the OSHA Hazard Communication Standard, the Canadian Workplace Hazardous Materials Information System and European directives and are considered trade secrets under US Federal Law (29CFR and 40CFR), Canadian Law (Health Canada Legislation), and European Union Directive 67/548/EEC.

### SECTION 4 - FIRST AID MEASURES

**INHALATION:**

Remove patient to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Seek medical attention when needed.

**EYES:**

If in eyes, remove contact lenses if present, then hold eye open and rinse slowly and gently with potable water for 15-20 minutes. Call a Poison Control Center or doctor for further treatment advice. Do not use over-the-counter medications except under physician supervision.

**SKIN:**

Wash affected areas with soap and water; seek treatment for persistent irritation or burns.

**INGESTION:**

**DO NOT INDUCE VOMITING.** If the victim is conscious and not convulsing, give 1 or 2 glasses of water and **IMMEDIATELY** transport the victim to a hospital; Transport the package or this MSDS with the victim. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body to prevent aspiration of vomitus.

### SECTION 5 - FIRE FIGHTING MEASURES

**GENERAL HAZARDS:**

Product is not readily flammable, but will support combustion. Products of combustion include compounds of carbon, hydrogen, nitrogen and oxygen, including carbon monoxide. Product will release toxic/irritating vapors under fire conditions. **FLASH POINT > 300° F (> 149° C).**

**AUTOIGNITION TEMPERATURE - Not Determined. FLAMMABLE LIMITS - Not Established.**

**EXTINGUISHING MEDIA:**

Carbon dioxide, water fog, dry chemical, chemical foam are all acceptable.

**FIRE FIGHTING PROCEDURES:**

Firefighters must wear self-contained respiratory equipment and chemical fire suits; cool containers to prevent pressure buildup and possible explosion when exposed to extreme heat. Caution - material will support combustion!

**UNUSUAL FIRE AND EXPLOSION HAZARDS:**

Closed containers can explode due to buildup of pressure when exposed to extreme heat; product emits toxic/irritating fumes under fire conditions.

**HAZARDOUS COMBUSTION PRODUCTS:**

Smoke, fumes, oxides of carbon and nitrogen, ammonia

### SECTION 6 - ACCIDENTAL RELEASE MEASURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:**

**CAUTION - WILL SUPPORT COMBUSTION.** Do not wash to sanitary sewer or bodies of water. All spills - confine spill, soak up with approved absorbent, shovel product into approved container for disposal. Flush area with water, recover flush for proper disposal. Large spills (such as bulk transport quantities) may require notification of authorities and the use of specially-trained personnel.

### SECTION 7 - HANDLING AND STORAGE

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:**

Keep container closed when not in use; protect containers from abuse; protect from extreme temperatures, open flames. **CAUTION - This material will support combustion.** Keep this and other chemicals out of reach of children. Avoid storage with strong acids and/or oxidizers.

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<b>PRODUCT NAME:</b> PNA Probe + Hybridization Buffer		<b>DATE:</b> August 10, 2010	
<b>SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION</b>			
<b>HAZARDOUS COMPONENTS</b>		<b>EXPOSURE LIMITS</b>	
Formamide (a)		TLV: 10 ppm as TWA; (skin); (ACGIH 2004). REL:10 ppm (15 mg/m <sup>3</sup> ) as TWA (skin) (NIOSH). OSHA Vacated PEL: Formamide: 20 ppm (30 mg/m <sup>3</sup> ) as TWA.	
Tris(hydroxymethyl) aminomethane [Trometamol]		None Established.	
<b>PERSONAL PROTECTION</b>			
RESPIRATORY PROTECTION: None required while threshold limits (See Above) are kept below maximum allowable concentrations; if TWA exceeds limits, NIOSH approved respirator must be worn. Refer to 29 CFR 1910.134 or European Standard EN 149 for complete regulations.			
PROTECTIVE GLOVES: Neoprene or rubber gloves with cuffs should be worn while using product. Discard torn gloves immediately.			
EYE PROTECTION: Wear safety glasses with protective side shields or goggles to avoid eye contact.			
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Laboratory coats or apron recommended as good practice; safety eyewash and sink or shower should be readily accessible at all times.			
WORK / HYGIENIC PRACTICES: Practice good hygiene and workplace habits. Do not smoke while using product. Wash hands before eating, drinking, or the use of tobacco products. Minimize body contact with this, as well as all chemicals in general.			
<b>SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES</b>			
APPEARANCE AND ODOR Colorless liquid, characteristic odor		VAPOR PRESSURE ND	
pH 8.5-9.5		SPECIFIC GRAVITY (WATER = 1) 1.039	
FREEZING POINT 32°F (0° C)		SOLUBILITY IN WATER Total	
BOILING POINT 212°F (100° C)		VISCOSITY Equivalent to water (~1.0 cP)	
FLASH POINT >300°F (>149° C)		VAPOR DENSITY (AIR = 1) >1	
FLAMMABLE LIMITS LEL: NE UEL: NE		EVAPORATION RATE (WATER = 1) <1	
AUTOIGNITION TEMPERATURE ND		VOLATILE ORGANIC COMPOUNDS INFORMATION Total VOCs - None	
<b>SECTION 10 - STABILITY AND REACTIVITY</b>			
STABILITY Product is stable under normal conditions		CONDITIONS TO AVOID: Temperature extremes, open flame	
INCOMPATIBILITY (MATERIALS TO AVOID): Strong Oxidizers, Strong Acids			
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: None under normal conditions. Under fire conditions, Smoke, fumes, oxides of carbon and nitrogen, and ammonia may be produced.			
HAZARDOUS POLYMERIZATION: Will not occur.		CONDITIONS TO AVOID: None related to hazardous polymerization.	
<b>SECTION 11 - TOXICOLOGICAL INFORMATION</b>			
Hazardous Components	CAS # EINECS #	LD50 of Ingredient (Specify Species and Route)	LC50 of Ingredient (Specify Species)
Formamide (a)	75-12-7	Oral, mouse: LD50 = 2450 mg/kg	Inhalation, rat: LC50 > 3900 ppm / 6H
	200-842-0	Oral, rat: LD50 = 4000 mg/kg	
Tris(hydroxymethyl) aminomethane [Trometamol]	77-86-1	Oral, rat: LD50 = 5900 mg/kg	NE
	201-064-4		
<b>Additional Information on Formamide - Teratogenicity:</b> Specific Developmental Abnormalities: Craniofacial and Musculoskeletal, Oral, Rat:TDL <sub>o</sub> =7980mg/kg. Embryo or Fetus: Death, Dermal, Rat:TDL <sub>o</sub> =1200mg/kg; Stunted fetus, Oral, Rat:TDL <sub>o</sub> =2g/kg. <b>Reproductive Effects - Fertility:</b> Post-implantation mortality, Oral, Rat:TDL <sub>o</sub> =2g/kg. <b>RTECS #LQ0525000.</b>			
<b>SECTION 12 - ECOLOGICAL INFORMATION</b>			
No data are available on the adverse effects of this material on the environment. Neither COD nor BOD data are available. Based on the chemical composition of this product it is assumed that the mixture can be treated in an acclimatized biological waste treatment plant system in limited quantities. However, such treatment should be evaluated and approved for each specific biological system. None of the ingredients in this mixture are classified as a Marine Pollutant.			

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## SECTION 13 - DISPOSAL CONSIDERATIONS

**WASTE DISPOSAL METHOD:**  
 Dispose of in accordance with Local, State, and Federal Regulations. This product may produce concentrated hazardous vapors or fumes in a disposal container creating a dangerous environment. Refer to "40 CFR Protection of Environment Parts 260-299" for complete waste disposal regulations for ignitable materials. Consult your local, state, or Federal Environmental Protection Agency before disposing of any chemicals. Do not flush to sanitary sewer or waterway.

## SECTION 14 - TRANSPORT INFORMATION

<b>PROPER SHIPPING NAME:</b> Not Regulated for Transport	
<b>DOT HAZARD CLASS / Pack Group:</b> Not Regulated	<b>IATA HAZARD CLASS / Pack Group:</b> Not Regulated
<b>REFERENCE:</b>	<b>IMDG HAZARD CLASS:</b> Not Regulated
<b>UN / NA IDENTIFICATION NUMBER:</b> None	<b>RID/ADR Dangerous Goods Code:</b> Not Regulated
<b>LABEL:</b> Not Regulated	<b>UN TDG Class / Pack Group:</b> Not Regulated
<b>HAZARD SYMBOLS:</b> None	<b>Hazard Identification Number (HIN):</b> None

Note: Transportation information provided is for reference only. Client is urged to consult CFR 49 parts 100 - 177, IMDG, IATA, EU, United Nations TDG, and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

## SECTION 15 - REGULATORY INFORMATION

**TSCA (USA - Toxic Substance Control Act): All components of this product are listed on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory) or are exempted from listing because a Low Volume Exemption has been granted in accordance with 40 CFR 723.50.**

**SARA TITLE III (USA - Superfund Amendments and Reauthorization Act):**

Acute Health: <b>YES</b>	Chronic Health: <b>YES</b>
Fire: <b>NO</b>	Sudden Release of Pressure: <b>NO</b>
Reactive: <b>NO</b>	

**SARA 313 REPORTABLE INGREDIENTS:** None


**CERCLA (USA - Comprehensive Response Compensation and Liability Act):** None

**California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986:** No components listed.

**Sate Right-To-Know Laws:** Formamide (CAS # 75-12-7)- California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

**CPR (Canadian Controlled Products Regulations):**

**WHMIS Classifications:** D2-B - Material Causing Other Toxic Effects



**IDL (Canadian Ingredient Disclosure List):** Formamide (CAS # 75-12-7) is on the CIDL.

**DSL / NDSL (Canadian Domestic Substances List / Non-Domestic Substances List):** Listed on CDSL/NDSL.

**EINECS (European Inventory of Existing Commercial Chemical Substances):** Referenced and listed.

**WGK Water Quality Index:** 3

**EUROPEAN HAZARD SYMBOLS** **GLOBAL HARMONIZATION SYSTEM (GHS) HAZARD SYMBOLS**



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## SECTION 16 - OTHER INFORMATION

### Legend:

**ACGIH - American Congress of Government Industrial Hygienists**  
**CAS - Chemical Abstracts Service**  
**EINECS- European Inventory of Existing Commercial Chemical Substances**  
**HMIS - Hazardous Materials Identification System**  
**IARC - International Agency for Research on Cancer**  
**NA - Not Available**                      **ND - Not Determined**  
**NE - Not Established**                **NR - Not Reported**  
**NIOSH - National Institute for Occupational Safety and Health**  
**NTP - National Toxicology Program**  
**OSHA - Occupational Safety and Health Administration**  
**RTECS - Registry of Toxic Effects of Chemical Substances**

### REVISION SUMMARY:

Revised to GHS Specifications 9/3/2009. Replaces 7/24/2006 edition. LB

### MSDS Prepared by:

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The information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.