

Chemical Emergency Preparedness and Emergency Response along the ARIZONA - SONORA Border

Arizona State University
College of Technology and Applied Sciences
California Arizona Consortium

National Institute of Environmental Health Sciences
WETP Conference
Washington D.C., April 22-23, 2004



Southwest Border



US - Mexico Border

- Extends 2000 miles
- Border region extends 62.5 miles on each side of the border
- 4 states in the US
- 6 states in Mexico
- 14 Sister Cities
- 26 US federally recognized Native American tribes along international border
- Population in the border region –approx. 6.3 million in the US and 5.5 million in Mexico



Border Sister Cities

- San Diego – Tijuana
- Calexico – Mexicali
- Yuma – San Luis
- Nogales – Nogales
- Naco – Naco
- Douglas – Agua Prieta
- Columbus – Puerto Palomas
- El Paso – Ciudad Juarez
- Presido – Ojinaga
- Del Rio – Ciudad Acuña
- Eagle Pass – Piedras Negras
- Laredo – Nuevo Laredo
- McAllen – Reynosa
- Brownsville - Matamoros



La Paz Agreement

- La Paz, Baja California January 29, 1983

- Signed by

 - President Miguel de la Madrid

 - President Ronald Regan

- Article 1

...agree to cooperate in the field of **environmental protection** in the border area on the basis of equality, reciprocity and mutual benefit. The objectives of the present Agreement are to establish the basis for cooperation between the Parties for the **protection, improvement and conservation of the environment** and the problems which affect it, as well as to agree on necessary measures to prevent and control pollution in the border area, and to provide **the framework for development of a system of notification for emergency situations...**



Arizona State University California Arizona Consortium Binational Emergency Response Training

Arizona State University
California Arizona Consortium

Border 2012
Chemical Emergency
Preparedness and Response
Task Force

Arizona - Mexico Commission
Emergency Management
Ad Hoc Committee

Arizona Governor's Office
of Homeland Security

Binational Sister City Plans

Sonora Protección Civil
(Emergency Management)



Southwest Center for Environmental Research and Policy (SCERP)

- US Congress established SCERP in October 1990 to “initiate a Comprehensive Analysis of Possible Solutions to Environmental Problems in US/Mexican border Region”
- US Congress funded grants to the Universities for the Environmental Research
- Border 21 1996



SCERP

US Universities	Mexican Universities
Arizona State University (ASU)	El Colegio de la Frontera (COLEF)
New Mexico State University (NMSU)	Instituto Tecnológico de Ciudad Juárez (ITCJ)
San Diego State University (SDSU)	Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM)
The University of Texas – El Paso (UTEP)	Universidad de Autónoma de Baja California (UABC)
The University of Utah (UU)	Universidad de Autónoma de Ciudad Juárez (UACJ)



ASU /CAC Outreach to Mexico: SCERP Grants

- 40-Hour **Hazardous Waste** Worker Operations and Emergency Response Training (HazWOpER)
- 16-Hour **Hazardous Materials Transportation** Training
- **Pollution Prevention** – Waste Solvent Reduction
- 24 Hr. First Responder **Emergency Response** Training



Course Curriculum Utilized NIEHS WETP Training Modules

- 40 Hr. Hazwoper
- 24 Hr. Emergency Response
- 16 Hr. Hazardous Materials
Transportation



40-Hr. Hazardous Waste Worker Operations Emergency Response Training (HazWOpER)

Location	Maquilladora Facility
Mexicali, Baja CA	Emerson Electric
San Luis Rio Colorado, Sonora	DAEWOO Electronics
Nogales, Sonora	Grupo Chamberlin

16-Hr. Hazardous Materials / Waste Transportation

Location

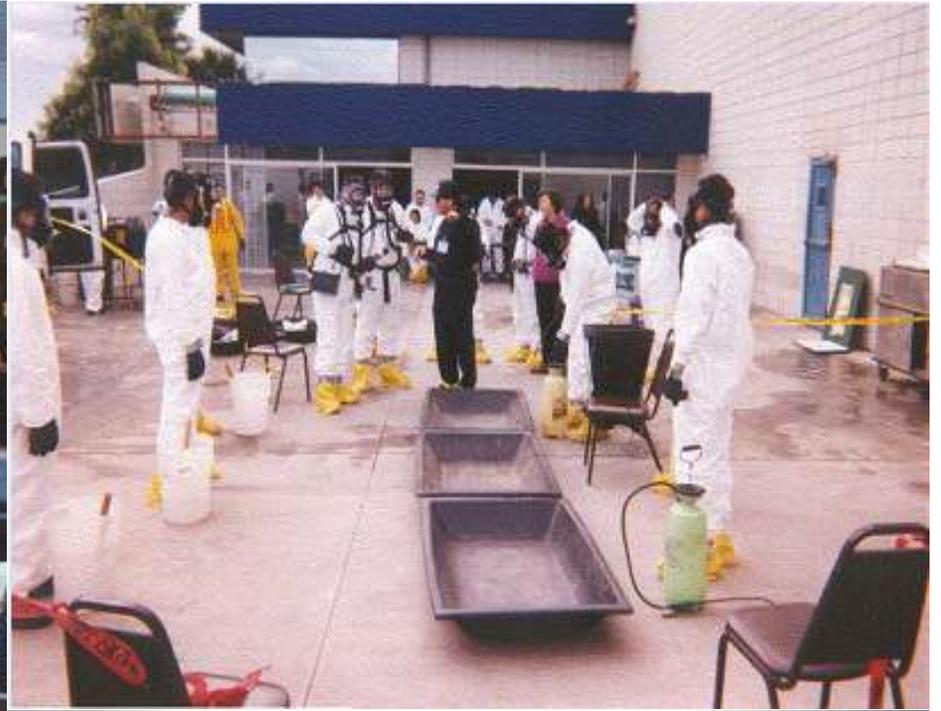
Nogales, Sonora

Ciudad Juarez, Chihuahua

Mexicali, Baja California

Nuevo Laredo, Tamaulipas





Pollution Prevention Studies

Nogales, Sonora

Agua Prieta, Sonora

Mexicali, Baja California



Border 2012

- April 4, 2003, Tijuana, Baja California, Mexico
- U.S. EPA and Mexico SEMARNAT (U.S. EPA Counterpart),
- 10 border states (4 U.S. and 6 Mexico)
- 26 US Tribes

Border 2012: U.S.- Mexico Environmental Program: mark the beginning of the 10-year joint effort, by these Federal agencies, the states, municipalities, non-governmental organizations, educational institutions and border residents to work together to **improve the public health and environment on the U.S.-Mexico Border**



Border 2012 Goals

- #1 Reduce Water Contamination
- #2 Reduce Air Pollution
- #3 Reduce Land Contamination
- #4 Improve Environmental Health
- #5 Reduce Exposure to Chemicals as a Result of Accidental Chemical Releases and/or Acts of Terrorism
- #6 Improve Environmental Performance through compliance, Enforcement, Pollution Prevention, and Promotion of Environmental Stewardship



Goal #5: Objectives

1. 2004 – Mechanism for Identification of **Risks** on Both Sides of the Border
2. 2008 – Joint Contingency Plans Completed for all 14 Pairs of Sister Cities with Binational Committees for **Chemical Emergency Prevention**
3. 2012 – 50% of Sister City Joint Contingency Plans Completed to Include Plans for **Counter-Terrorism**



Binational Joint Sister City Plan Ambos Nogales

- March 1, 2001, Nogales, Arizona
- Signed by
 - 👤 Municipal President Lic. Cota Montoya
 - 👤 Mayor Rios
- Goal

In the event of a disaster of serious proportions that may require a great deal of **coordination and cooperation**, a plan between the two cities to **prevent and respond** to disasters will better ensure a full and effective utilization of resources and manpower essential to **protect the public health, safety and environment within the border area**



Emergency Management Ad Hoc Committee (AMC)

- Arizona Governor Napolitano and Sonora Governor Bours signed a Declaration of Cooperation addressing:
 - Joint training in hazardous materials, fire fighting and bioterrorism
 - Technical and facility resource exchange
 - Coordination of critical incident response



CAC 24 Hr. First Responder Technician Level Training

- Nogales, Sonora, Mexico Maquilladora
Grupochamberlain – March 2004



CAC Emergency Response Training Curriculum Modules

NEW FOCUS

- Paradigm Change in site safety and health planning; and emergency response planning
 - Chemical and Biological Warfare Agents
 - Personal Protection Equipment
 - Instrumentation
- Risk Analysis – Probability factors
 - Site Security Planning
 - Weapons of Mass Destruction (BNICE)



Chemical Agents

- Nerve
- Blister
- Blood
- Choking



CHEMICAL & BIOLOGICAL WARFARE AGENTS

CHEMICAL AGENTS

- NERVE Agents
 - Tabun (GA)
 - Soman (GD)
 - V Agent (VX)
 - Sarin (GB)



CHEMICAL & BIOLOGICAL WARFARE AGENTS

CHEMICAL AGENTS

- BLISTER Agents
 - Mustard Gas (H)
 - Distilled Mustard (HD)
 - Nitrogen Mustard (HN)
 - Lewsite (L)
 - Phosgene Oxime (CX)

CHEMICAL & BIOLOGICAL WARFARE AGENTS

CHEMICAL AGENTS

- BLOOD Agents
 - Hydrogen Cyanide (AC)
 - Cyanogen Chloride (CK)



CHEMICAL & BIOLOGICAL WARFARE AGENTS

CHEMICAL AGENTS

- CHOKING Agents
 - Cl_2
 - Phosgene



CHEMICAL & BIOLOGICAL WARFARE AGENTS

CHEMICAL AGENTS

- RIOT CONTROL Agents (Irritants)
 - Tear Gas (CS or CR)
 - Mace (CN)
 - Pepper Spray (OC)
 - Adamsite (DM)



Biological Agents

- Bacteria
- Virus
- Biological Toxins
- Rickettsiae



CHEMICAL & BIOLOGICAL WARFARE AGENTS

BIOLOGICAL AGENTS

- BACTERIA
 - Anthrax
 - Brucellosis
 - Cholera
 - Plague
 - Tularemia



CHEMICAL & BIOLOGICAL WARFARE AGENTS

BIOLOGICAL AGENTS

- VIRUSES
 - Smallpox
 - Venezuelan Equine Encephalitis (VEE)
 - Viral Hemorrhagic Fevers (VHF)



CHEMICAL & BIOLOGICAL WARFARE AGENTS

BIOLOGICAL AGENTS

- RICKETTSIAE
 - Q Fever



CHEMICAL & BIOLOGICAL WARFARE AGENTS

BIOLOGICAL AGENTS

- BIOLOGICAL TOXINS
 - Botulinum Toxin (Botulism)
 - Ricin
 - Saxitoxin
 - Staphylococcal Enterotoxin B
 - Trichothecene Mycotoxins



Weapons of Mass Destruction (BNICE)

- B Biological
- N Nuclear
- I Incendiary
- C Chemical
- E Explosive



Terrorism Impact on Emergency Management Approach

- Classical planning:
 - Risk = Magnitude x Probability
 - control systems based on the risk
- Terrorism Impact on Emergency Management Planning:
 - Probability Change
 - Risk Change
 - Control focuses on **Site Security**



IMPACT ON EVALUATING THE RISK OF CHEMICAL RELEASES

- TWO MAJOR CHANGES SINCE 9/11
 - PROBABILITY FACTOR
 - Has Changed For Chemicals On Site
 - Need to include ASSESSMENT of
 - Chemical & Biological Agents which
 - can be brought on site



Personal Protective Equipment Suits

Tychem Responder CSM

Chemical Test Results for Responder CSM Fabric

Chemical Agent	Breakthrough time (minutes)	Breakthrough Criteria (mg/cm ²)
Mustard (HD)	>480	4.00
Lewisite (L)	>480	4.00
Tabun (GA)	>480	1.25
Sarin (GB)	>480	1.25
Soman (GD)	>480	1.25
Nerve (VX)	>480	1.25



Personal Protective Equipment Respirators



MSA

Advantage 1000CBA-RCA



MSA

Advantage 3200CBA-RCA

ADVANCED PORTABLE DETECTOR DETECTOR

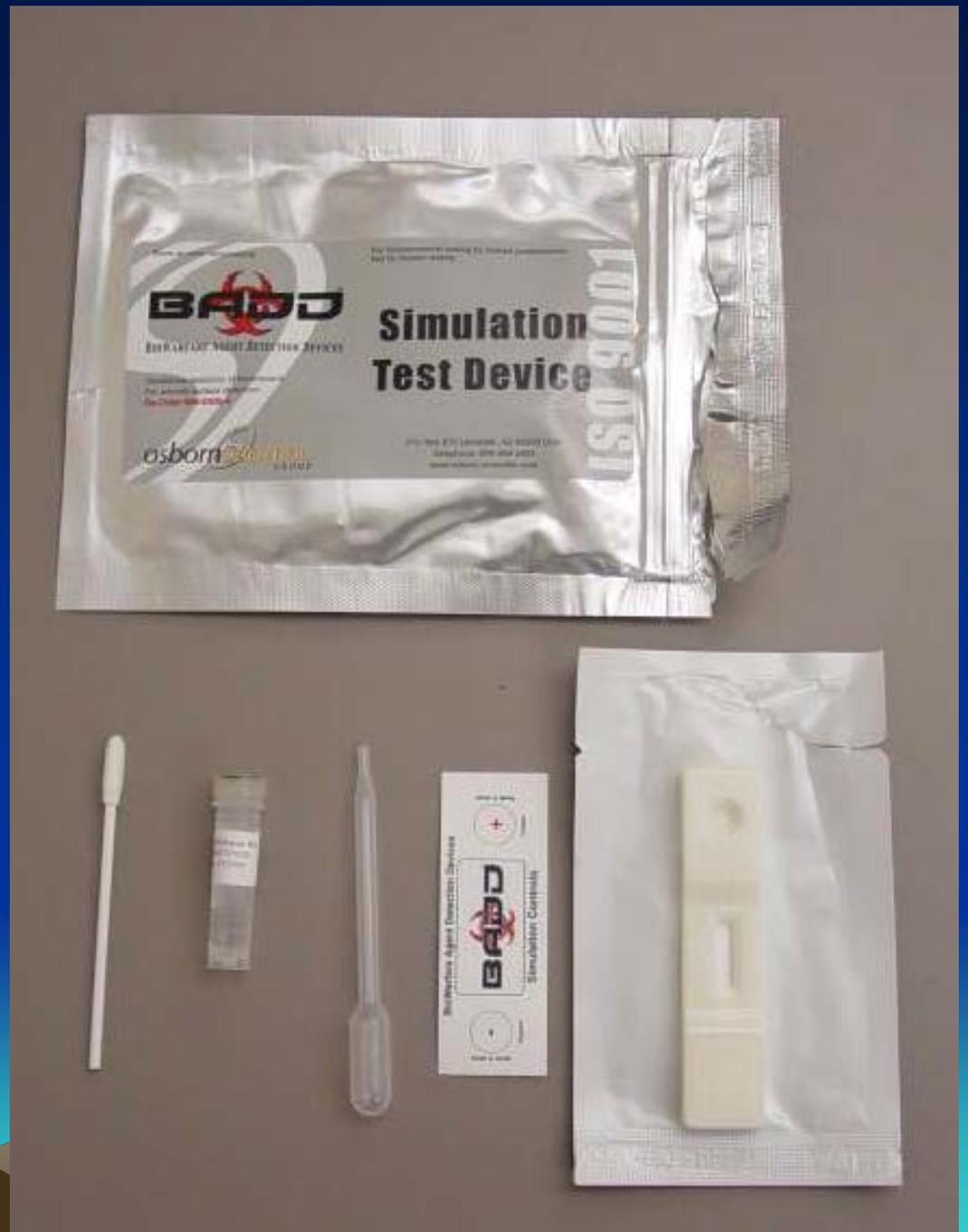
APD 2000



COLORIMETRIC TUBES Pump



DETECTOR KITS Biological Agents Detection Kits



NEW PARADIGM OF READINESS

- Hazard Assessment
- Control Methods
- Personal Protective Equipment
- Instrumentation / Detection Devices
- National Incident Management System
- Site Security Activities



Future CAC Training Other Sister City Plans

- San Luis Colorado, Sonora & San Luis, Arizona
- Agua Prieta, Sonora & Douglas, Arizona
- Naco, Sonora & Cochise County, Arizona



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