Learning Objectives

- Provide an overview of shelter types and their operations
- Explain the role of environmental health within shelters
- Describe planning and pre-operational considerations for shelters
- Describe the considerations and process in conducting an environmental health shelter assessment
- Identify key environmental health preparedness, response, and recovery actions for shelters and interim housing

Sheltering Philosophy

- Shelters should be, first and foremost, places of comfort and safety
- Shelters should be readily accessible to those affected
- Shelter workers and managers should be strong advocates for their clients
- Clients must remain proactive participants in recovery
- Shelters should provide a safe and secure environment that accommodates the broadest range of needs in each community

Factors in Sheltering

- Close living quarters
- Stressed population
- Damage to key infrastructure systems
- Limited access to health and mental health care
- Nontraditional demands on facilities

Key Partners

- Emergency management agencies
- Emergency Support Functions (ESF)
  - ESF 6 Mass Care
  - ESF 8 Health and Medical
- NGOs (American Red Cross)
- NVOAD
- Private sector
- Media
Role of Environmental Health
- Prevention of injury and illness
- Shelter planning activities and exercises
- Shelter environmental health assessment
- Training and education activities
- Technical assistance and consultation
- Assist partner organizations

Shelter Settings
Congregate Sheltering
- Schools
- Places of worship
- Cafeterias
- Sports facilities
- Convention Centers
Transitional Sheltering
- Trailers
- Hotels
- Tents
- College dormitories
- Seasonal camps
- Cruise ships
- Apartments/rentals

Shelter Cycle

Events and Duration
Warning
- Example: Hurricane Evacuation
  - More time to open shelter
  - Time to advise residents to bring essential items
  - Residents can prepare emotionally
  - Less need for long term services
  - Fewer supply requirements

No Warning
- Example: Apartment Fire, HAZMAT Spill
  - Less opportunity for site selection
  - Clients may arrive before Red Cross
  - Clients have little time to gather essentials
  - Less need for long term services
  - Fewer supply requirements

Congregate Settings
- Emergency evacuation shelters
- General population shelters
- Mega-shelters
- Spontaneous/ad-hoc shelters
- Medical shelters
- Special needs shelters
- Responder base camps
- Pet shelters

Sheltering Decision Process

LONG Duration SHELTERING

SHORT Duration SHELTERING

Warning
- Example: Slow –Rising Floods, Hurricane
  - More time to open and establish logistics
  - Need longer term services
  - Greater supply needs
  - Need for long term staffing
  - Shelters become a focal point for relief services

No Warning
- Example: Earthquake, Tornado
  - Clients may arrive before Red Cross
  - Short lead time for obtaining supplies
  - Need for long term services
  - Greater supply needs
  - Shelters become a focal point for relief services
Preparedness

Shelters Core Activities
- Registration/intake
- Dormitory management (sleeping areas)
- Food service
- Health and medical
- Case management
- Family reunification and messaging
- Children’s temporary respite care
- Recreation

Preparedness

Shelter Classification and Guidance
- Mass Care Standards and Indicators – ARC and National Voluntary Organizations Active in Disasters (NVOAD)
- Guidance on Planning for Integration of Functional Needs Support Services in General Population Shelters
- American Red Cross Shelter Training
- Mega-Shelter Planning Guide
- CDC Environmental Health Shelter Assessment Tool
- ADA Shelter Checklist
- FAST Teams
- Apply common sense and observation skills

Preparedness

Functional and Access Needs
- Guidance on Planning for Integration of Functional Needs Support Services (FNSS) in General Population Shelter
- Reasonable modifications to policies, practices, and procedures
- Assistive technology
- Durable medical equipment (DME)
- Consumable medical supplies (CMS)
- Personal assistance services (PAS)

Preparedness

Shelter Standards and Guidance
- Mass Care Standards and Indicators – ARC and National Voluntary Organizations Active in Disasters (NVOAD)
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- Apply common sense and observation skills

Preparedness

Other Applicable Standards
- Food Code
- Fire Code
- Building Code
- Americans with Disability Act (ADA)
- Local ordinances
- Others...

Preparedness

Space Considerations

<table>
<thead>
<tr>
<th>Shelter Classification</th>
<th>Minimum Sleeping Space Allocation</th>
<th>Operation Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evacuation Shelter</td>
<td>20 ft²</td>
<td>24 hrs before to 72 hrs after event</td>
</tr>
<tr>
<td>Emergency General Population Shelter</td>
<td>40 - 60 ft²</td>
<td>72 hrs after event and beyond</td>
</tr>
<tr>
<td>Medical Shelter and Special Needs Shelter (SNS)</td>
<td>100 ft²</td>
<td>24 hrs before to 72 hrs after event</td>
</tr>
<tr>
<td>Responder Camp/Base</td>
<td>40 ft²</td>
<td>Beginning of event and beyond</td>
</tr>
</tbody>
</table>

Preparedness

Environmental Health Staffing
- Define environmental health role and scope
- Determine how facilities will be assessed
- Determine mechanisms for seeking help
  - County and state mutual aid
  - EMAC: state-to-state assistance compacts
  - ESF 8: federal support
  - Other (NGOs, MRCs, private sector, etc.)
- Deploy staff accordingly
  - Assign permanent staff in large facilities
  - Staff appropriate to size of facilities and population
  - 24 hour on-call staff
- Use environmental health resources wisely
Preparedness

Site Selection Considerations
- Location
  - Out of flood or impact zones
  - Protected areas – inland
  - Accessible to population
- Consider the type of disaster
- Type of shelter
- Available square footage
- Code and regulatory compliance
- Available infrastructure (water, wastewater, electrical)
- Types of facilities used
- Accessibility
- Hazard and Vulnerability Assessments

Activity
- You are an environmental health specialist whose city is providing shelter for a displaced population of 5,000 people. A large convention center is being used as the shelter and is co-located with a pet shelter. The Health Department Director has asked you to conduct a comprehensive environmental health assessment of the shelter.
  - Each team will be assigned one of the following areas to assess: Food; Sanitation and Hygiene; Water and Ice; Vector & Pests; Indoor Environment; Outdoor Environment; Solid Waste; Children’s area and Health and Medical
    - Develop a list of items to access within the assigned area
    - How frequently should this area be accessed
    - What expertise is needed

Response

Initial Action and Considerations
- Determine available shelter facilities in geographic area
- Conduct pre-operational assessment with partners
  - Assess undamaged/limited damage facilities
- Facility selection process may vary depending on disaster event/type
- Conduct pre-operational assessment with partners

Pre-Operational Assessments
- Overall layout
- Adequate square footage
- Sanitation - toilets, showers and handwashing
- Location and convenience of sanitation facilities
- General safety
- Solid waste containers
- Food facility sanitation
- Climate control and ventilation
- CDC Shelter Assessment Tool

Environmental Health Assessments
- Initial/rapid vs. comprehensive assessment
  - Multiagency assessment teams
- Length of operation
- Size and type of facilities
- Who’s managing the shelter
- Number and availability of EH staff
- Survey/assessment forms
Response

Environmental Health Assessments

• Time of assessment
• Address identified items on-site when possible
• Identify training needs: staff, volunteers
• Make reports clear and easy to read
  – Prioritize findings on public health impact
  – Look for system fixes
  – Divide report by section if needed (Housekeeping, food service, maintenance, etc.)
  – Photos or diagrams are helpful
• Be aware of shelter staff rotation

Report Assessment Findings

• Focus on priorities - urgent and unmet needs
• Shelter Manager and section leads
• Emergency Operations Center
  • Incident Command (e.g. Safety Officer)
  • Incident Action Plan
  • ESF 6, ESF 8
• Health Department Director
• Copy for personal file
• Others as appropriate
• Review priority items

Public health focus

• Cleaning and housekeeping
• Dormitory management (sleeping areas)
• Food service
• Health and medical (*disease surveillance, infection control)
• Laundry services
• Children’s areas
• Health education and messaging
• Pets and service animals
• Occupational health

Cleaning/Housekeeping

• Proper disinfectants and concentrations
• Adequate supplies, properly stored
• Cleaning methods and procedures
• Bodily fluid clean-up: spill kits
• Universal precautions
• Solid waste management
• Frequency of cleaning
• Trained staff
• Staff protection (PPE)

Dormitory Management

• Arrangement and spacing of cots
• Aisles free and clear
• Limit food in the dormitory
• Waste disposal
• Air space and quality
• Linen exchange
• Noise management
• Light management

Food Services

• Food service providers
  – Prepared on site
  – Catered
  – Prepackaged
  – Home-cooked meals (not recommended)
• Handwashing stations
• Food preparation, service, and dining areas
• Ensure food safety
• Education of food handlers
Response

Health and Medical
• Triage and assessment of healthcare needs
• Range of services varies by type of shelter
• Onsite services vs. off-site services
  – Separate area for ill persons
    – Separation until symptoms have ceased for 24 hours
    – Hand washing stations at each entrance to isolation/observation area
  – Cleaning schedule increased
• Epidemiology and surveillance
• Infection control
• Special protocols for illness and outbreaks
• Hand sanitizers available (not a substitute for hand washing)
• Consider differences with Pandemic flu, Earthquakes, CBRNE

Children
• Health screening
• Diaper-changing areas with hand washing station and waste disposal
• Bottle washing station
• Choking/safety hazards
• Clean toys and surfaces
• Appropriate toilet facilities
• Safe recreation area
• Temporary respite care

Response

Laundry Services
• Provided on or off site
• Mobile laundry services
• Follow recommended standards for laundry
  – Temperature and sanitizing requirements
  – Dispose of soiled or damaged linens
  – Separate sorting and folding areas
  – Separate clean and dirty storage—clearly marked

Pets and sheltering
• PETS Act
• Animal related diseases
• Zoonotic considerations
• Foreign animal diseases
• Partners (SART and CART)
• Animals and human separation
• Evacuated pets and feral animals

Response

Pets and sheltering
• Service animals
  – Always permitted in human shelters per ADA
  – May require additional square footage
• Pets
  – Not permitted in human shelters
  – Sheltered in co-located areas adjacent to general population shelters
  – Stand alone pet shelters
  – Animal hospitals, vets, kennels
  – Procedures may differ among states
• Exotic Pets
• Owners must have evacuation and sheltering plan
• Livestock
  – USDA ESF 11, State agriculture office

Response

Pet Shelter Considerations
• Disease transmission to humans
• Potable water needs
• General cleaning and disinfection
• Allergies, air flow and temperature
• Worker training and protection
• Fecal management
• Biohazards/sharps
• Animal food storage and donations
• Animal control and handling safety
• Vector Control and pest management (fleas, ticks)
Response

Health Education and Messaging
- Printed materials and public announcements
- Target audience: occupants, workers, volunteers
- Recorded video
- Languages
- Hearing and visually impaired
- Messages: simple and easy to read, illustrated
  - Examples
    - Handwashing
    - Food safety
    - Reporting illness

Recovery

Activities
- Re-entry education and messaging
- Re-occupancy education and messaging
- Assessment of interim housing options
- Interim housing – apply good public health principles (Water, wastewater, solid waste, etc)

Medical Needs Shelter

- General Population Shelters comprise individuals with or without functional or access needs
- Field Hospital?
- Medical Needs Shelters are for individuals needing medical supervision in a non-acute care setting. Individuals require care beyond the capability of a general population shelter.
  - Sometimes called Special Needs Shelters
  - Typically operated/staffed by a Federal, State or Local Medical Response Team
    - Disaster Medical Assistance Teams (DMAT)
    - USPHS Rapid Deployment Force
    - Medical Reserve Corps
    - State Medical Assistance Team
    - Definitions can vary by state
    - Strategic National Stockpile – Field Medical Station Cache

Medical Needs Shelter

- Determine environmental health role
- Coordinate with medical unit and entity involved with medical services for state emergencies
- Preventive medicine unit
- Challenges
  - Immune suppressed population
  - Co-located with general population shelter
  - Special attention to food safety, infection control, sanitation facilities, cleaning

Medical Needs Shelter

Considerations
- Increase space requirements
- Special diets required
- Increased staffing needs
- Secured and refrigerated medication
- Medical equipment needs
- Medical waste/sharps disposal
- Bodily fluids cleanup
- Adult personal care products
- Bed types
- Infrastructure needs
- Increased handwashing needs
Activity
Review the findings from the Wastewater Module Exercise in which the number sanitary facilities (showers/toilets/handwashing stations) were calculated. Divide into groups of 6-8 then answer the following questions related to sanitary facilities:

– What process would be use to obtain these needed sanitary facilities?
– Where would these sanitary facilities be obtained in an emergency?
– How would these sanitary facilities be maintained and monitored?
– What supply issues would you anticipate?

Other Recommended Exercises and Activities

• Visit a local homeless shelter and contrast and compare health issues with those found in emergency shelters
• Attend American Red Cross training on shelters
• Conduct joint shelter training sessions with American Red Cross & VOADs
• Conduct a joint shelter exercise with Public Health and American Red Cross & VOADs