

# 1999 HURRICANE FLOYD & FLOOD

## Report On The Deployment & Use of Restop Disposable Travel Toilet

### Introduction

The purpose of this report is to inform emergency management coordinators, incident commanders and directors of emergency services of the availability and use of the Restop Field Lavatory system.

### Product Description

The Restop Field Lavatory System is a highly portable, personal and group sanitation restroom designed for rapid deployment in-the-field in emergency environments.

The total system consists of a commode and 60 waste containment liners known as Restop Daily Kits. Each Daily Kit contains two Restop 1 bags for liquid waste and one Restop 2 pouch for solid waste. A privacy tent available separately completes the system.

At the core of the system is a liner bag that contains a blend of polymers, enzymes and deodorizers that turns waste into an odorless gel on contact. A patented bag-in-bag design and final zip closure firmly secures the waste.

Then the enzyme/polymer formulation breaks the waste down for quick and sanitary disposal. The products are environmentally friendly as the liners can be disposed of in any trash container.

### Product Features

The features of this highly portable emergency product are:

- Environmentally friendly, personally transportable to any location
- Lightweight and durable
- Airlift transportable (no need for truck or forklift)
- 60-day supply (for one person) or a 15-day supply for a family of four
- Rapidly deployed via logistical staging areas and regional warehouses
- Adaptability (suitable for groups and individuals)
- Indoor/Outdoor use
- Ideal for disabled or elderly
- Easily ordered

### CASE STUDY:

#### 1999 Hurricane Floyd and Flood

##### Background

Hurricane Floyd damaged 34,378 homes and affected 18,500 families, many of whom relied upon state and federal emergency services for up to three weeks and longer. The disaster lasted many weeks, affecting 48 counties throughout the eastern half of North Carolina.

Several towns were severely flooded and under water for up to nine days. In many instances, the entire infrastructure of these communities was destroyed or rendered inoperable, including: power supplies, fresh water, sewage systems, pumping stations, transportation and telecommunications.

##### Emergency Deployment

Of grave concern was the failure or flooding of septic systems, sewage systems and underground pipes, creating a potentially serious health hazard.

Of the 48 affected counties, one of the most severely hit was Edgecombe County which was almost completely devastated by flooding.

One of the most pressing needs was the necessity for bathroom facilities to accommodate the tremendous influx of flood victims to the shelters. Shelter supervisors required immediate setups of multiple, lightweight, simple restrooms. They selected the Restop Field Lavatory System using the EM-2000 requesting and tracking software.

##### Availability

FEMA coordinated and supported efforts with the North Carolina State Office of Emergency Management. A Staging Area and Commercial Post was established in Kingston, North Carolina.

FEMA has the Restop Field Lavatory System in its inventory. Ready for dispatch to affected states. The product can be requested by Emergency Management Coordinators through FEMA, using the EM-200 Emergency Management Software.

In this operation, requests were made by American Red Cross and various County Emergency Services.

## Usage

From a Logistical Staging Area at Kingston, the Restop Field Lavatory System was provided to area shelters that were housing 6500 displaced residents. Additional Restop Systems were distributed to businesses and homeowners for their personal use. Additional items were provided to local Search and Rescue Teams for use by their own personnel in the field.

## Product Use Applications

Restop Field Lavatory System is the personal waste disposal product system that emergency coordinators did depend on as their key resource for managing the complexities of personal hygiene during the Hurricane Floyd/Flood crisis shelter scenario. This applied to a diverse socioeconomic population of men, women and children under adverse conditions. Its high tech design and easy use addressed the real life issues that families faced every hour of every day under severe conditions.

The Restop Systems in shelters could be placed strategically so the elderly wouldn't have to walk so far. The close proximity of the system helped the disabled and parents with children. The easy setup, containment with deodorizers and privacy tent insured convenience, discreetness and safety.

Many families, elderly and disabled took the product home with them. Since many of them could not be as mobile the Restop System could be placed strategically in their homes. They were handed the Restops to take home because they needed sanitation while their homes were rebuilt, and water restored and turned back on. It worked well because of its disposability and easy setup in any strategic space such as use in bedrooms for the elderly and disabled.

## The Facts

Group use at central emergency shelters:

- Disabled
- Elderly
- Children
- Families

Distribution to homeowners and small businesses

Distribution to Search and Rescue and other emergency teams

- 58% of the affected population rescued by military
- Families consist of 61% of the shelter population
- Elderly consist of 39% of the shelter group
- Disabled comprise 29%
- Women make up 51%
- Number of poverty level/working blue collar 75%
- Number of professional/managerial 25%

The Restop Field Lavatory System as evaluated by the coordinators in the field found the product relevant, useful, effective, self-contained and did significantly improve the lives of the victims of Hurricane Floyd/Flood.

100% of the coordinators asked did recommend the use of the product for preventative and contingency planning, victim assistance and actual shelter use. An extraordinary product performed 100% under extraordinary circumstances.

## Health Risk Assessment

The health risks of contact with human waste is multifold: they may contain disease-bearing bacteria such as E. coli, Salmonella and Shigella and such viruses as Hepatitis A, B and F. Urine and feces are potentially infectious and contact directly, or through airborne transmission provides exposure to a variety of diseases. Additionally, open and untreated urine and feces create a fertile environment for the further growth of infectious bacterial and viral agents, some of which can produce life-threatening disease and contagion, even resulting in a wide-scale public health risk.

## Product Response:

Clearly, any enclosure, particularly a shelter, wherein a given population is in close quarters must be health protected.

The engineering of a practical, personal waste disposal product system design has to include: treatment, containment and protected waste disposal. The Restop Field Lavatory system is so designed and proven effective. By changing the bio-terrain the enclosed enzymes and polymers within the system's liners effectively neutralize and contain potentially harmful bacteria and viruses.