## Development of a Dry Decontamination Method for Mass Casualty Events – The NIOSH DryCon System

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This presentation describes the development of a prototype dry decontamination system (DryCon) for use in the event of a mass casualty incident involving an aerosol contaminant. Wet decontamination is currently used almost exclusively in such cases, although it may be infeasible in cold weather, and there may be cultural sensitivity and/or modesty compliance issues with the requirement to disrobe. During disrobing, aerosol contamination could also re-suspend, leading to increased inhalation of contaminants.

NIOSH's prototype DryCon system uses air jets for dry decontamination, avoiding some of these drawbacks. The system is portable and can run on building-supplied or generator power. Multiple people can be decontaminated rapidly, one after the other, using this system.

DryCon has been tested in a controlled environment, using a manikin, a fluorescent powder as a simulated contaminant, and three types of fabric squares, using a decontamination time of 60 seconds. At the higher airflow tested, 90% of full blower speed, or approximately 540 cfm, mean decontamination efficiencies of 56.8%, 70.3% and 80.7% were measured for firefighter turnout fabric, cotton denim, and polyester double knit fabric, respectively. The addition of static neutralization via a linear ionizer increased the decontamination efficiencies for firefighter turnout fabric and cotton denim to 68.0% and 76.2%. Removal of this easily re-aerosolized contamination helps to protect personnel from further inhalation exposures.

The results demonstrate the promise of this technique for use as an alternative to wet decontamination, as a first step before disrobing for wet decontamination in a more secure indoor environment, or for use in an industrial setting for post-work-shift decontamination. Further research will be necessary to prove the effectiveness of this technique in real-world applications.