

# CASE STUDY

## MDI Monitoring of a Retrofit Attic Job

### KEY RESULTS



Improved worker and occupant safety are constantly verified by ICP's continual testing.



MDI not detected in the center of the attic one hour after spraying.



Significantly less downtime. Workers can safely re-enter after one hour.

**PRODUCTS USED** | HandiFoam® HVLP closed cell foam dispensed through Nitrosys Plus® HVLP equipment

**GOAL** | The goal was to find a worse-case scenario retrofit SPF job where a large volume of HandiFoam HVLP MD 2.0 would be sprayed through HVLP Nitrosys Plus equipment, and monitor this spray application for MDI monomers throughout spraying, and afterwards.

**JOBSITE BACKGROUND** | ICP monitored MDI monomers during a retrofit spray foam job in a hip roof attic using Nitrosys Plus HVLP dispensing equipment and HandiFoam HVLP closed cell drum foam. The house was an older, one story ranch located in Kirtland, Ohio. The attic had a footprint of 60' x 32', was 4' high at its max, and contained the house's HVAC unit. The underside of the roof deck, 1,800 ft<sup>2</sup>, was sprayed with 5,400 bd. ft. of closed cell foam at a depth of approximately 3" +/- 0.2".

During the actual monitoring period (5 hrs.) approximately 2,200 bd. ft. of foam was applied. The attic was an entirely enclosed space other than the garage-entry hatch. The single roof pipe vent and its fan in the center of the roof was inoperable, and so little ventilation was provided from this point. From the hatch opening, the attic was ventilated continuously to the outside using a 12" tube fan and appropriate exhaust ducting. The fan operated during and after spraying. HVLP spray foam output volume was calculated at approximately 12-14 lb./min. Dynamic pressure in the dispensing gun was verified prior at approximately 90 psi by the Nitrosys Plus manufacturer, Spray Foam Systems, via rigorous testing by its engineering department.

#### MONITORING |

Areas monitored for MDI monomers:

- Applicator
- 10' "helper" distance in attic
- Garage directly below hatch opening
- Living room
- Center of attic one hour after spraying

#### RESULTS |

- Applicator must wear full-face cartridge respirator. MDI above OELs. Supplied air not required.
- MDI below short and long term OELs by approximately an order of magnitude at 10' "helper" distance. However, ICP recommends an OSHA approved half face cartridge respirator, eye & skin protection.
- Adjacent work areas, for example in the garage near the access steps and the living room samples, should not require respirators. MDI non-detectable or barely above detection limit.
- It appears that after a waiting period as short as one-hour, workers or other trades could safely enter and work in the roof attic that had been recently sprayed with the HVLP HandiFoam closed cell foam (no MDI was detected).
- MDI not detected in the center of the attic one hour after spraying. Workers could re-enter this attic without PPE.

**SUMMARY** | HandiFoam's HVLP System once again shows approximately the same MDI exposure results as low pressure pressurized kits and cylinders. Improved worker and occupant safety via lower re-entry, re-occupancy, and PPE requirements are constantly being verified through ICP's continual testing.