DPR Methyl Iodide RCD Review of Exposure Assessment

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The central coast is a patchwork of labor intensive crops

Fields are often adjacent to schools and residential areas

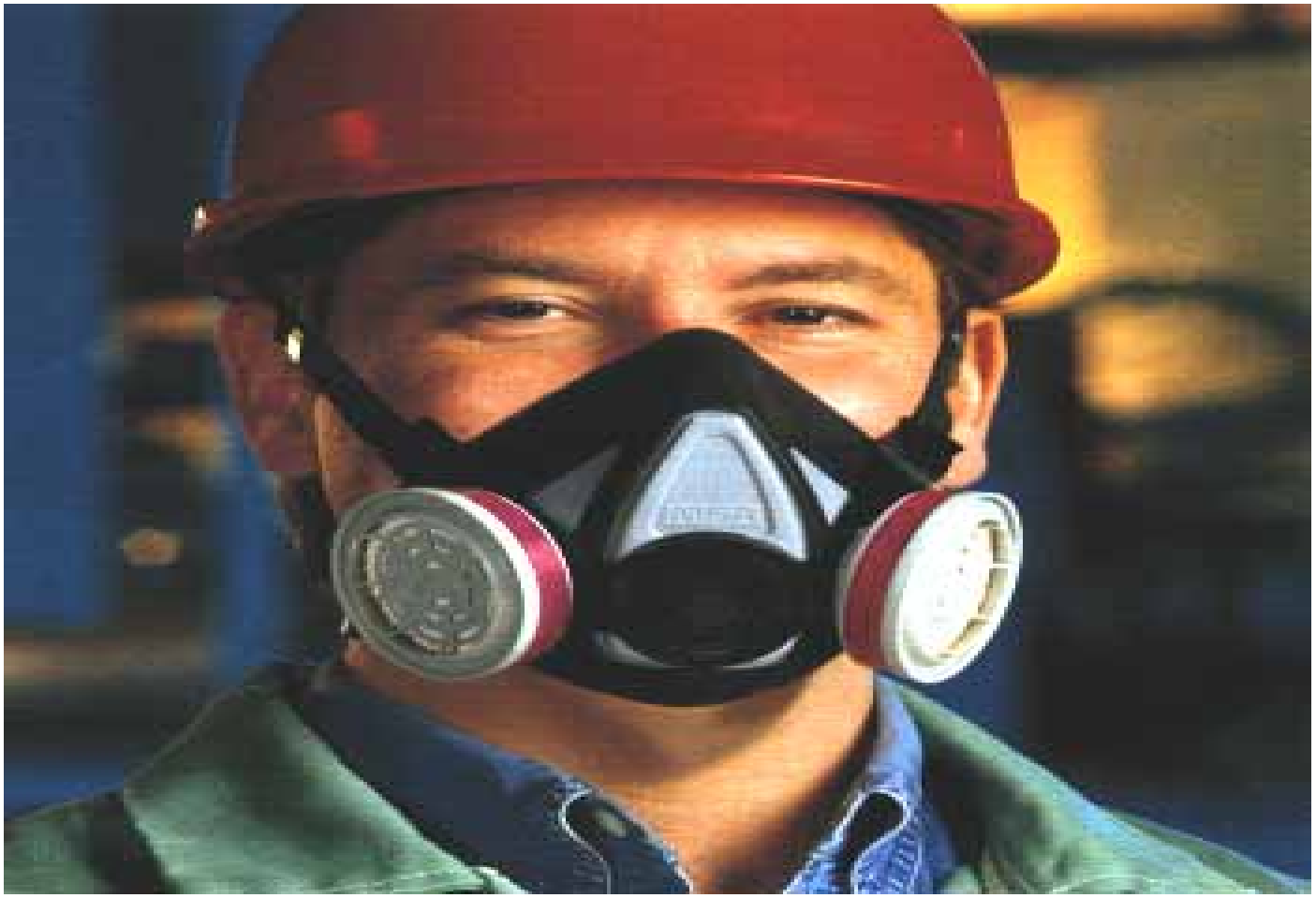
DPR uses many reasonable assumptions in estimating exposure:

- Maximum label rate
- 95th percentile exposures to compensate for very small data sets
- Downwind exposures under fairly stable air conditions
- Indoor and outdoor exposures the same

Some assumptions in RCD underestimate worker exposure . .

- Unrealistic respiratory protection factor
- 3 months/year of application work
- 8 hour work day
- Negligible dermal exposure assumed
- Combined exposure with chloropicrin not evaluated

RCD assumes respirator reduces air concentrations 10-fold



Fit testing can be either quantitative or qualitative

Most Common Agricultural Pesticide Violations 2006-2008

(Source DPR PUE Statistical Profile 2009)

Type of Violation	Number of Violations
Personal Protective Equipment	2284
Handler Training	2026

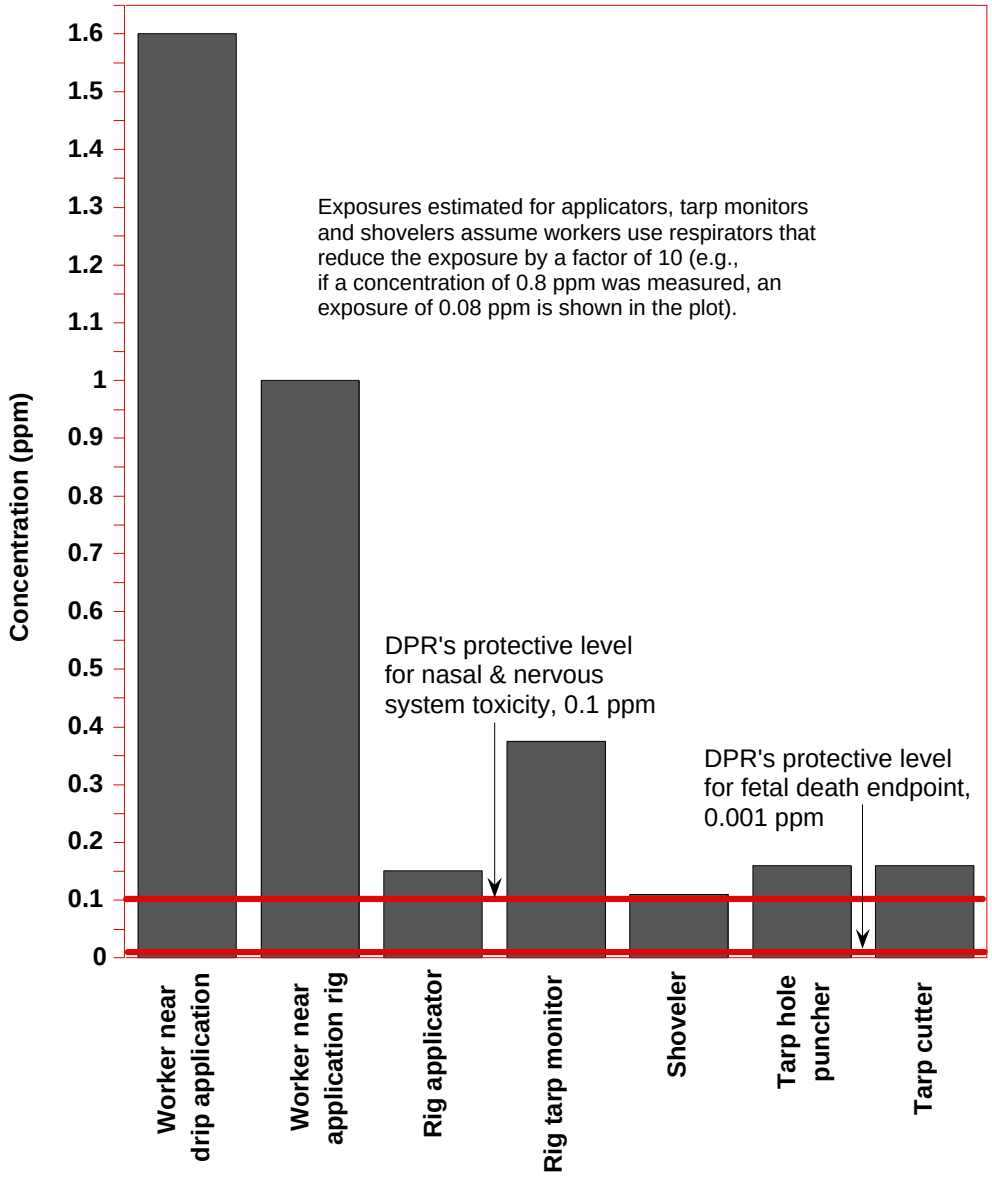
Nicas and Neuhaus reviewed 7 respirator fit studies:

- 5 of 7 studies yielded a protection factor of <5.3
- Based on results recommend reducing half-mask respirator assigned protection factor from 10 to 5
- Found tendency to smaller protection factors in studies involving gases and small particles

Source: M. Nicas and J.Neuhaus JOEH Feb 2004

DPR Predicted Worker Exposure Levels for Selected Tasks

Source: DPR MeI RCD Vol. 1, Aug. 2009



Applicators Who Travel Exposed 5 Months

Counties	**Month**	**2007 Soil Fumigation**
Ventura	June	1,433 acres
Ventura	July	1,152 acres
Ventura & Monterey	August	4,926 acres
Ventura & Monterey	Septem ber	6,494 acres
Monterey	October	4,549 acres

8 hour workday is not reasonable worst case in agriculture

- Seasonal workers are eager to work all hours offered
- Agricultural workers, including pesticide applicators, are only entitled to over-time pay after 10 hours of work (Wage Order 14)
- Irrigation workers are completely exempted from overtime pay requirements
- Exposure is extended during transit to and from work and often at home

Dermal exposure potential significant during drip application

- Routine duties include repair of drip lines and of tears in tarp
- Label use directions prohibit wearing of gloves to keep vapors from being trapped
- MSDS both recommends use of gloves (Viton type) and states that users shouldn’t wear gloves
- 100% dermal absorption should be assumed since no data is available

Midas Label and MSDS Use Instructions

User Safety Requirements

- Do not wear jewelry, gloves, goggles, tight clothing or any rubber protective clothing/boots that can trap iodomethane or chloropicrin vapors against your skin. Iodomethane and chloropicrin vapors can be trapped inside clothing and cause skin injury.

Skin Protection: Avoid skin contact with this material. Wear protective clothing and gloves (NIOSH recommends Viton™ (gloves suits), Responder™ suits, Tychem 1000™ suits).

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Case study of acute methyl iodide dermal exposure

- 49 yr old male had regular job of carrying and loading tanks of MeI onto a truck
- Wore chemical protective suit and air-supply full-face respirator
- At end of shift saw breach in soles of suit
- Rash on genitalia, inner thighs, groin
- Fainted and in ER severe burns began to show on torso,, back, lower extremities
- Developed memory,concentration and task performance problems

Source:Schwartz AJIM 47:550-556 (2005)

Limitations of exposure data

- Sampling times of 5 to 6 hours don’t allow evaluation of shorter term peak exposures
- No measurements of concurrent chloropicrin exposure
- Exposure calculations assume body weight of 71.8 kg (160 lb). Two workers monitored weighed only 47 kg (100 lb)

Risk of well water contamination

- Private rural wells are rarely monitored for contaminants
- According to Florida EPA groundwater.monitoring planned in Florida has not been initiated yet.