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Air Monitoring Detects High Levels of Methyl Bromide Near Elementary School in Watsonville

Air monitoring by the Environmental Working Group detected extremely high levels of the toxic pesticide methyl bromide drifting from a strawberry field next to Salsipuedes Elementary School in Watsonville, Calif., following fumigation of the field on Oct. 25, 1997.

The monitors detected methyl bromide in concentrations more than 10 times greater than the state's safety standard at distances more than 250 feet from the treated field, well beyond the mandated 200 foot buffer zone between the field and the school. Although the pesticide was applied to the field early in the morning of Saturday, Oct. 25, methyl bromide remained in the air near the school property until well after the end of the school day Monday, Oct. 27. Peak levels were among the highest measured by EWG in almost two years of methyl bromide monitoring in California (Table 1).

Table 1. EWG methyl bromide monitoring near Salsipuedes Elementary School in Altos, CA. Twelve hour samples were taken at a private residence next to the school.

Day	Time period	Detection (ppb)
Saturday 10/25 overnight	(6:30 pm to 5:40 am)	3,700
Sunday 10/26	(5:40 am to 5:55 pm)	530
Sunday 10/26 overnight	(5:55 pm to 6:05 am)	1,000
Monday 10/27	(6:05 am to 6 pm)	170

Source: Environmental Working Group.

These results constitute further evidence that the safety standards and regulations set by the California Department of Pesticide Regulation (DPR) are completely inadequate to protect the public from exposure to a chemical known to cause nerve damage and birth defects. Even when special restrictions are imposed, DPR's regulations have consistently failed to control methyl bromide drift. Therefore, this volatile poison should be banned as unsafe for use under any conditions.

Background

On Sept. 25, 1997, a field next to Amesti Elementary School in Watsonville was fumigated with methyl bromide. (Both Salsipuedes and Amesti are in the Pajaro Valley Unified School District.) The parents of 265 Amesti students, concerned about the dangers of methyl bromide exposure, kept their children home from school that day. Sharing those concerns, a number of Amesti teachers had attempted to obtain permission from the school district for EWG to set up air monitoring equipment on the school property during the fumigation. This request was denied. The day after the fumigation, the school district — which lost an estimated $20,000 to $25,000 state funds as a result of the mass absences on that and subsequent days — reprimanded the teachers and parents for promoting "unnecessary hysteria." (Parsons 1997, Linneman 1997)

On Sept. 27, when the remaining 13 acres of the field were fumigated, EWG was able to place air monitoring equipment on private property near the school. However, because the school district denied permission for monitoring on the school grounds, the closest available site was 500 to 600 feet away from the edge of the fumigated field. No methyl bromide was detected during 24 hours of monitoring. Previous EWG monitoring projects, using infrared laser technology, have detected methyl bromide at this distance or farther from fumigated sites. The fact that the wind was blowing away from the monitor very likely contributed to the fact that no methyl bromide was detected.

However, teachers and parents in the district remained concerned and continued to seek an opportunity to conduct air sampling near a school. A month later, as preparations were made for fumigation of a 26.6-acre strawberry field next to Salsipuedes Elementary, permission was again sought to place monitoring equipment on the school grounds. Once again, the school district denied the request. However, an alternate site was secured, on private property bordering the school. This site was 250 to 300 feet from the fumigated field, and situated so that any methyl bromide detection would be as close as possible to the school grounds. The state-mandated buffer zone, intended to protect students, teachers, and nearby residents from exposure, was 200 feet. (See Figure 1).

Methodology

Fumigation of the field began at approximately 6 a.m. Saturday, Oct. 25. At 6:30 p.m., a Salsipuedes teacher activated the monitoring equipment. The monitor used was a 1.5-liter stainless steel, silicon-lined Summa canister, equipped with a vacuum pump set to sample air continuously for 12 hours. The canisters were changed approximately every 12 hours through 6 p.m. on Monday, Oct. 27. (Daylight Savings Time ended Oct. 26.) The canisters were then shipped by overnight express to an independent laboratory, which analyzed the samples twice to ensure accuracy.

Results at Salsipuedes

The 24-hour time-weighted average of methyl bromide in the samples was 2,115 parts per billion (ppb) from Saturday evening to Sunday evening, and 585 ppb from Sunday evening to Monday evening (Figure 2).

Figure 1.

Salsipuedes School Site Map

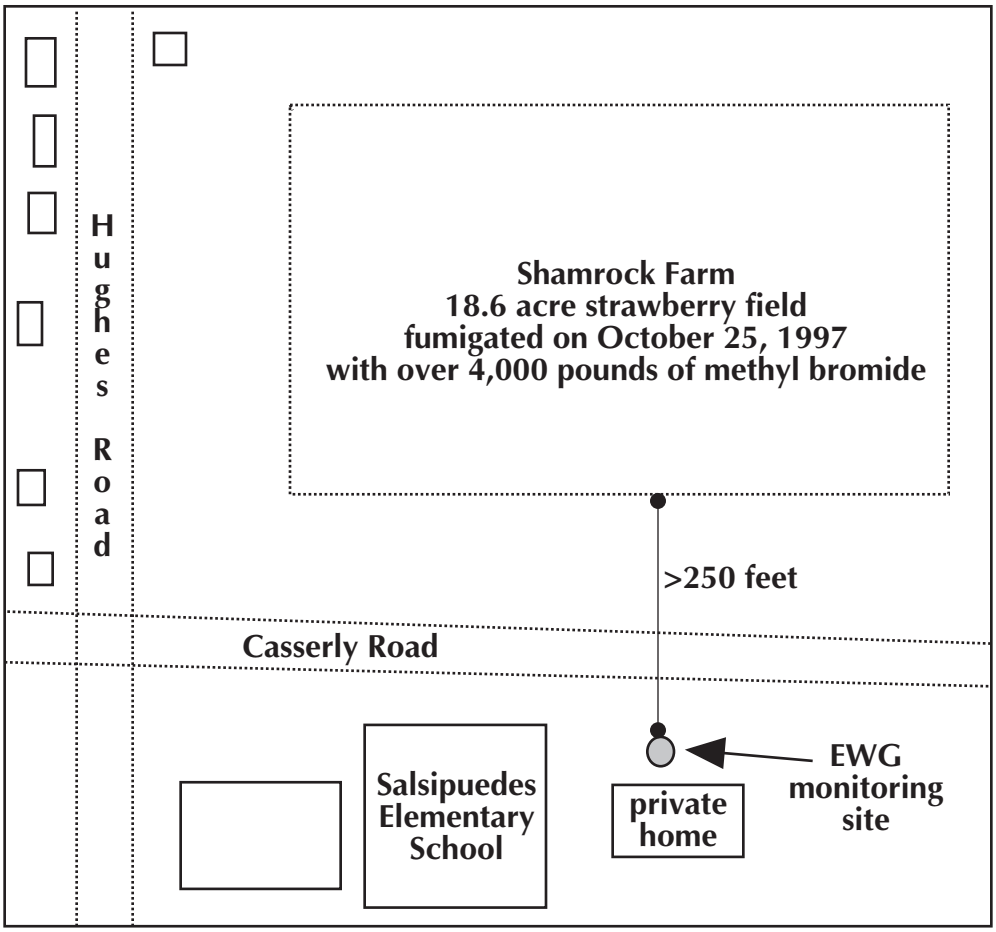
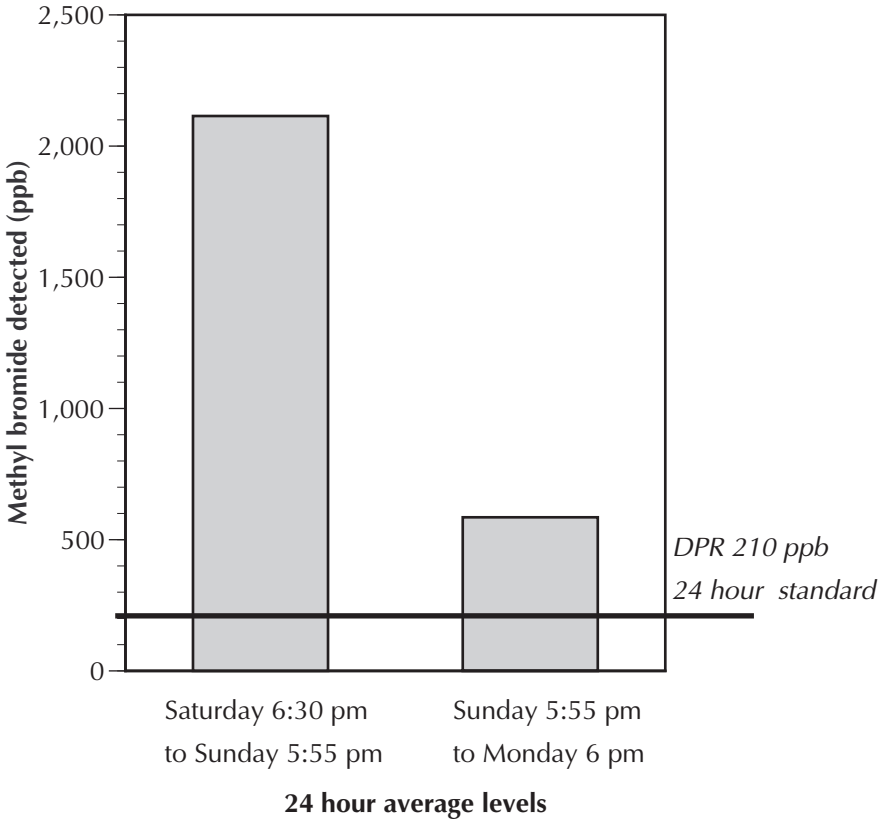


Figure 2. Methyl bromide levels measured in the air next to Salsipuedes Elementary School far exceeded state safety standards.



Samples were taken on private property next to the school, approximately 250 feet from edge of the fumigated field on October 25-27, 1997

DPR's safety standard for outdoor exposure to methyl bromide is 210 ppb over 24 hours.The level detected during the first 24 hours was more than 10 times the state's safety standard. The level found during the second 24 hours was more than 2.5 times the safety standard. Even if averaged over the entire 48 hours, the level of 1,217 ppb is almost 6 times the state's safety standard.

Figure 2 shows the results for each of the 12-hour monitoring periods; the averages for each 24-hour period and the entire 48 hours; and how those levels compare to the state's safety standard.

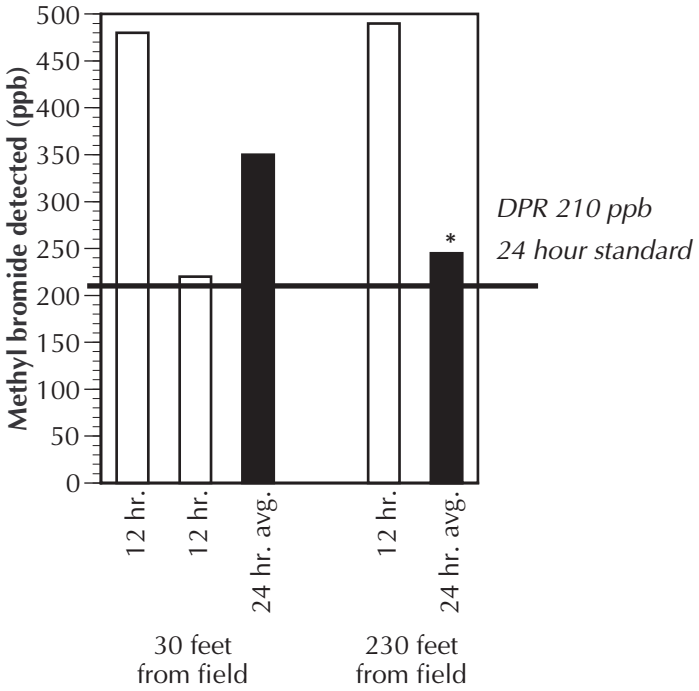
Results from previous EWG monitoring

The concern of Pajaro Valley parents and teachers was prompted by the results of EWG air monitoring in July 1997 in the Revilla Drive community of Castroville, not far south of Watsonville. Using the same Summa canister technology employed at Salsipuedes, EWG detected 12-hour average methyl bromide levels of 490 ppb more than 200 feet from the field and 480 and 220 ppb at monitoring stations 30 feet from the field (Figure 3). These measurements exceeded the state 24 standard for methyl bromide of 210 ppb. EWG's monitoring methods for this test were reviewed and verified as valid by DPR scientists.

Results from previous DPR Monitoring

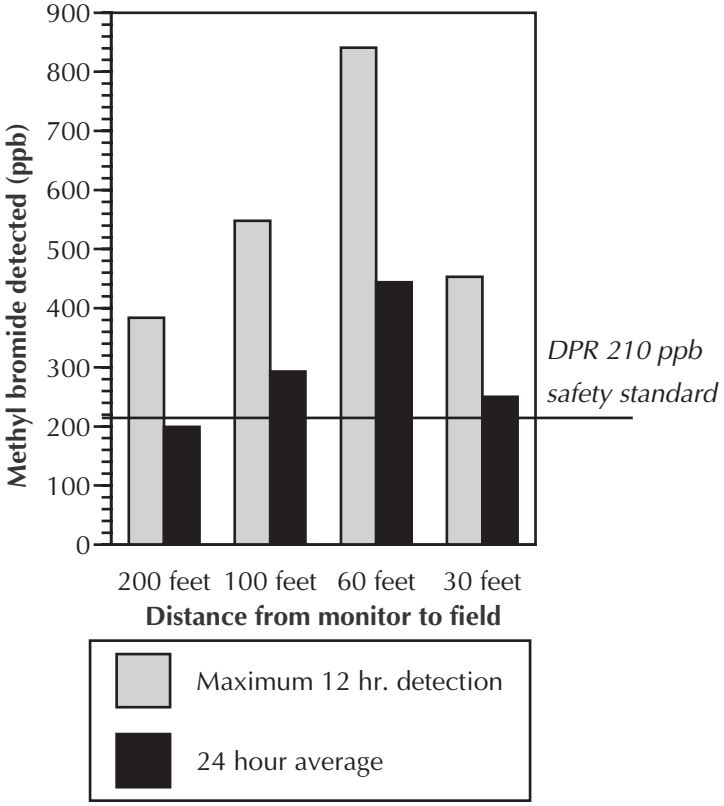
DPR also monitored in Castroville and found 24 hour average levels that exceeded their own standard. DPR monitoring at the field near Revilla Drive detected 12-hour average methyl bromide levels up to 384 ppb at 200 feet, 548 ppb at 100 feet, 841 ppb at 60 feet and 453 ppb at 30 feet. Using 24-hour averages, which DPR insists is the only valid measurement, the agency's monitors detected methyl bromide levels 199 ppb at 200 feet, 293 ppb at 100 feet, 444 ppb at 60 feet, 250 ppb at 30 feet (Figure 4). The level of methyl bromide detected at 200 feet was within 11 ppb of the 24 hour standard; all other levels exceeded the standard. DPR's monitoring employed a charcoal-filter technology that the agency's own scientists have acknowledged is less accurate than Summa canisters. Had the agency used the more accurate Summa technology, the amounts found would most likely have been higher.

Figure 3. EWG measured methyl bromide drift exceeding DPR safety standards at a Castroville fumigation site in August.



** One 12 hour sample of 490 ppb averaged over 24 hours, assuming zero methyl bromide exposure over the second 12 hours.*

Figure 4. DPR monitoring at a Castroville field found levels that exceeded the state safety standards at three monitoring locations.

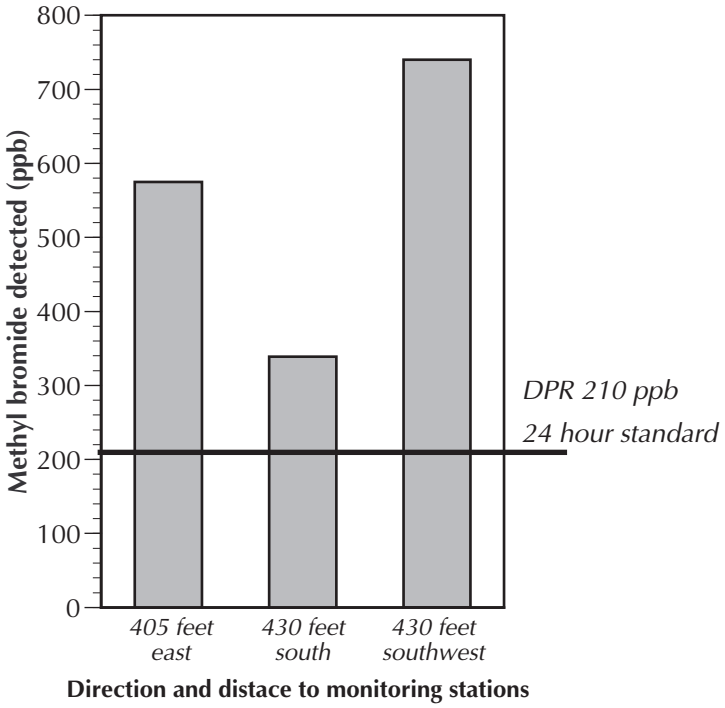


In Indio, Imperial County, in December 1996, DPR monitoring measured 575 ppb methyl bromide over 24 hours more than 400 feet from the treated field. Two other monitors at the same location found 339 ppb at 430 feet, and 406 ppb at 430 feet from the same field. This application was covered with a high barrier tarpaulin that was supposed to keep methyl bromide drift at safe levels (Figure 5).

Discussion

The results from Salsipuedes Elementary School, and previous monitoring in Castroville, underscore EWG's long-standing criticisms of DPR's methyl bromide standards and monitoring methods. They confirmed that:

Figure 5. DPR monitoring of test fields in Riverside County last winter detected methyl bromide above the DPR 210 ppb safety standard outside their required buffer zones.



- **Parents at Amesti acted responsibly**. Based on these results it is clear that the parents of Amesti students were not promoting "unnecessary hysteria," but taking logical precautions based on prior evidence. EWG and DPR studies have established that while not every application of methyl bromide results in the drift of levels above the safety standard, any given application may do so, depending on weather and other factors. Although most methyl bromide applications near schools are conducted on weekends, the Sept. 25 fumigation near Amesti occurred on a weekday when children and teachers were in school. Even when fumigation occurs on the weekend, there is no guarantee that students and others in the community will not be on the school premises. At a Sept. 31 public hearing on the Amesti case — which DPR scheduled after the fumigation had already occurred — parents and teachers explained that the school property is frequently used on weekends as a playground and community center (Malikoff 1997).

  DPR insists that the 210 ppb safety standard is adequate, but several other standards have been established that are significantly more stringent. Under the state toxics law known as Proposition 65, DPR's warning level for indoor exposure to methyl bromide is 21 ppb — 10 times more protective than the scientifically unjustifiable level for outdoor exposure. In addition, DPR's own scientists have recommended a methyl bromide safety standard for children of 60 ppb, which the agency failed to adopt. Finally, the federal Agency for Toxic Substances and Disease Registry has established a Minimal Risk Level for methyl bromide of 50 ppb, used to determine when toxic emissions from a Superfund site pose a public health risk.

- **DPR buffer zones are inadaquate.** Methyl bromide levels outside the DPR buffer zones at Revilla Drive and Salsipuedes far exceeded the DPR 24-hour standard of 210 ppb, even after these buffer zones were expanded from 30 to 200 feet. At Salsipuedes school, methyl bromide levels measured during the first 24 hours of monitoring were more than 10 times the state safety standard.

- **DPR ignores its own science.** The agency continues to avoid its responsibility to protect the public health by failing to expand buffer zones beyond 200 feet, even after there is ample evidence that the existing buffer zones are inadequate. The agency had its own results from Indio showing that methyl bromide levels exceeded the 210 ppb safety standard for 24 hours more than 200 feet from these fields, plus its own results from Castroville showing methyl bromide levels approaching 210 ppb at 200 feet, plus EWG results at Castroville showing methyl bromide levels at 245 ppb at more then 200 feet from the field.

- **DPR must implement improved safety standards.** Despite repeated assurances from the agency that it will soon announce new regulations based on its monitoring results findings, the old regulations are still in effect.

- **Methyl bromide drift is as unpredictable as the wind.** Highly variable weather conditions — particularly prevalent along the California coast — make any given use of methyl bromide akin to playing Russian roulette with wind, temperature and humidity. Comparing the monitoring results from the fumigations at Revilla Drive, Amesti and Salsipuedes shows that DPR's models, which use a highly suspect statewide average of weather data, consistently fail to predict the degree of methyl bromide drift. At every location where monitors were located downwind, levels of methyl bromide exceeded state safety standards outside standard buffer zones. Attempting to guess exactly which direction the wind will be blowing in the days following fumigation has proven to be impossible.

Conclusions and recommendations

Although DPR and the Pajaro Valley School District insist that students and teachers are not at risk when methyl bromide is used near schools, results from Salsipuedes clearly show that even when safety precautions are followed, very high levels of the pesticide can drift onto adjacent properties. These findings are supported by previous DPR and EWG monitoring.

It is disturbing that parents and teachers in Watsonville knew of these fumigations only because of ongoing controversy in the community. As a previous EWG study has shown, large amounts of methyl bromide are used in proximity to more than 800 California schools, yet state law does not require that school officials, students, parents or the surrounding affected community receive any advance notice. (EWG 1996)
Evidence continues to mount that methyl bromide's extreme toxicity and volatility make it unsafe for use under any circumstances. Accordingly, EWG renews its call for methyl bromide to be phased out, beginning immediately. During the phaseout, we urge adoption of the following measures to protect the health of children:

- Advance public notice of all methyl bromide applications in the state.

- An immediate ban on methyl bromide applications within 1,000 feet of all schools. School districts should use their authority to take the lead in efforts to stop methyl bromide applications near schools.If efforts to stop applications are unsuccessful,

school officials should support the right — and responsibility — of parents to protect their children from exposure.

- Monitoring of all methyl bromide applications statewide, and immediate public release of the results.

References

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