

Some Precautions During Greenhouse Rehabilitation

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Whenever you paint a greenhouse or growth room, or put an application of liquid coal-tar or asphalt type material on the roof of a building adjacent to your greenhouse, you should be aware of potential problems unless you take proper precautions. The objective of this article is to alert you to some potential problems so you can avoid them.

Fumes From a Roofing Job

In the summer of 1978, the headhouse was being given an application of black roofing compound. The material was heated in a large vat, and raised to the roof where it was applied. Unfortunately, the wind was blowing and air currents eddied down to a greenhouse where exhaust fans were operating to remove excess summer heat. But apparently fumes from the roofing job were drawn into the greenhouse which fortunately was relatively empty.

Poinsettia plants exposed to the fumes developed chlorosis along the veins (Figure 1) and growth was inhibited. There was considerable leaf drop but the plants recovered. However, New Guinea Hybrid Impatiens plants in the same location were severely injured (Figure 2) and many plants died.

This was a rather unusual situation, but the lesson to be learned is that it can happen, so take care to avoid the problem.

Paint Problems

You probably recall the article in the NYSFI Bulletin 72 (July, 1976) giving information about 2 instances of plant injury by paint volatiles. One was injury to potted

chrysanthemums (Figure 3) and the other was a severe monetary loss in cut flower roses (Figure 4). In both situations, the paints were aluminum paints which contained xylene and were not standard greenhouse paints.

During the past year, two additional problems were brought to my attention. In a growth room (a basement room with fluorescent lights) for growing seedlings, a pressure can of spray paint was used to "touch up" some parts of the benches. Subsequently, snapdragon seedlings developed chlorotic leaves (Figure 5). Although the plants were not killed, growth was set back. The injury was probably caused by the propellant in the aerosol pressure can. In some earlier tests, it was found that the propellant for one type of pressure spray paint container caused axillary bud abortion and leaf injury of chrysanthemums, similar to that in Figure 3. The growth room had minimal ventilation so the paint fumes were concentrated more than would happen in a well-ventilated location. It was interesting that some snapdragon cultivars were injured more than others, similar to the differences in susceptibility observed with chrysanthemum.

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Figure 1. Chlorosis of poinsettia caused by fumes from roofing project.



Figure 2. Injury to New Guinea Hybrid Impatiens by fumes from roofing job.

Greenhouse Rehabilitation Precautions (continued)

In early May this year, another possible paint problem was brought to my attention. The tray of annuals (Figure 6) came from a greenhouse in which the steam pipes were painted with an aluminum paint. (At this time I don't know which brand or type.) In an adjacent greenhouse, where painting had not been done, there was no plant injury. So it is suspected that the "culprit" was the paint. More details are being obtained.



Figure 3. Left: a normal branched chrysanthemum plant. Right: 4 plants exposed to paint fumes, given a pinch to induce branching, and photographed a few weeks later. Leaves were distorted, and axillary buds aborted.

In Figure 6, the four packs of *Salvia* on the left were killed or severely injured and did not recover. The next two packs of *Salvia* (a different cultivar) were injured less, recovered and bloomed in mid-June. The photograph was on May 9. *Begonia Viva*, *Browallia Blue Bells*, and *Coquette* (Little Pinkie) *Vinca* all show slight chlorosis but recovered satisfactorily with flowering in early to mid-June. Other cultivars that were injured were *Salvia farinacea*, *Browallia Marine Bells*, *Coleus candidum* and *Fiji Mix*, *Begonia Scarletta*, *Ambra White* and *Pink Tausendschoen*, *Ageratum Summer Snow* and *Blue Blazer*, and *Dusty Miller Silver Dust*.



Figure 4. Leaf injury and leaf drop of roses due to volatiles released when heating pipes were painted with a specific kind of aluminum paint.

Precautions Related to Painting

Here is a short summarization of the advice given in NYSFI Bulletin 72:

1. Use high grade greenhouse paint from a reliable source having had experience with satisfactory greenhouse paints. Don't just "run down" to the local store and pick up "whatever happens to be available."
2. Paint only when good ventilation is available. Ventilating prevents build-up of a toxic concentration of vapors. That is why summer is a good time to do your painting.

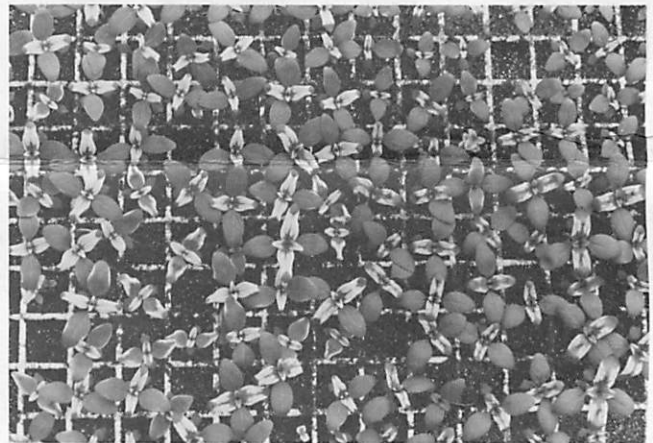


Figure 5. Snapdragon seedlings exposed to fumes from a pressure can of spray paint.

3. When possible, paint moveable objects out of doors or at least not where the vapors may affect plants.
4. Don't paint heating pipes with metallic paint. Metallic paints reduce heat transfer by about 25 percent. That is the opposite of energy conservation.
5. Ventilate. If paint has been applied, keep the vents open, or the exhaust fans operating, to exhaust the paint volatiles, and keep the concentration below any possible injury level.

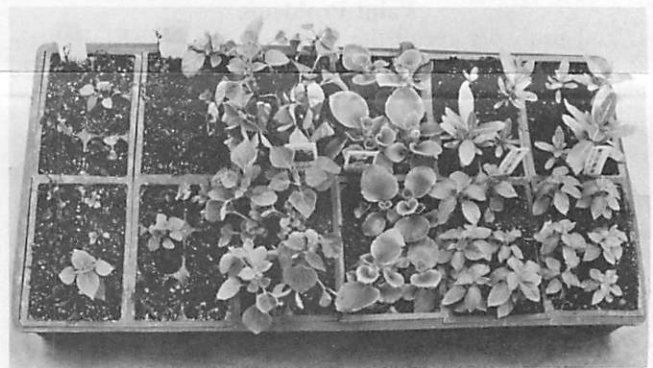


Figure 6. Bedding plants presumably injured by paint fumes in a greenhouse.

Other Air Pollution Problems

Plant injury can be caused by many other air pollutants such as ethylene, sulfur dioxide, ozone and other photochemical oxidants, herbicides, wood preservatives, pesticides, fluoride, mercury, some soil fumigants and a few others. **BUT THAT'S A WHOLE ADDITIONAL STORY.**