which sink to the bottom, the amount of copper which actually gets into solution is much lower than the expected theoretical value. We suspect that this is associated with absorption by bottom muds.

2. Copper which does get into solution in the water, mixes rapidly throughout the entire depth of the pond and does not form a uniform, heavy concentration near the bottom.

3. If copper sulfate is dissolved in water and applied to the surface of a pond, the amount of copper found in solution in the pond is greater than if the copper sulfate is applied in granulated form.

4. A heavy bloom of algae appears to have the capacity to rapidly reduce the amount of copper in the water of a treated pond.

Herbicides Offer Practical Weed Control For Industrial Sites

In most cases, weed control by herbicides is cheaper and more effective around industrial areas. The main consideration is using chemicals safely, a Humble Oil and Refining Company official said during the recent Industrial Weed Control Conference at Texas A&M University, College Station, Tex.

The official, James W. Hammond of Houston, said Humble found that it could save about 60 percent in costs by utilizing herbicides over hand and machine cutting. The herbicides also removed fire-spreading stubble.

“Chemical method of weed control is a way of industrial operation,” he said. “Therefore, we need to learn to use these substances safely.”

Hammond, director of industrial hygiene for Humble, said the firm’s review of herbicides included more than 90 different commercial chemicals and several hundred mixtures of these substances. Those selected combined safety and efficiency.

Factors other than worker’s risk also were studied. These included livestock, land poisoning, economic crops, fish and wildlife, children and pets.

He said there are ways to measure worker exposure to chemicals. Urinary lead, arsenic, mercury, pentachlorophenol and di-nitrophenol are related to exposure levels. These results, like the anti-cholinesterase agents, may be used to keep tab on degree of exposure on an integrated basis.

Organic herbicides, Hammond said, have a minimum degree of hazard associated with normal use. Chemical manufacturers give sufficient data on container labels to allow use without danger.

“As with all chemicals, human, livestock, wildlife, fish and economic plant exposures should be carefully evaluated on each application,” the speaker cautioned. “These exposures should be kept to the minimum practical to accomplish the task at hand.”

The Humble official outlined precautions to take in protecting eyes, skin and lungs. And he also touched on the subject of public liability.

“Some substances, like the hormone types, carry more public liability than others because of the danger of drifts to economic crops and by producing unpalatable flavor in drinking water and the fish that may live in these streams and lakes,” Hammond said.

Another speaker, Roy S. Rodman, supervising landscape architect for the Texas Highway Department, said Texas highway landscaping can be divided into four broad classes: Erosion control, landscaping, wildflowers and rest areas.

Of primary importance is establishment of grass or turf on

(Continued on page 33)
Insect Report

WTT's compilation of insect problems occurring in turfgrasses, trees, and ornamentals throughout the country.

Insects of Oramentals

**SPOTTED CUCUMBER BEETLE**

*(Diabrotica undecimpunctata howardi)*

**Alabama:** Adults heavy and widespread; camellias, chrysanthemums, and many other blossoms throughout Mobile County; adult feeding heavy on late rose blooms and other blossoms this fall and early winter throughout southern and central areas.

**CALCIFOLIA LOOPER**

*(Authorgrapha californica)*

**California:** Moderate on chrysanthemum nursery stock in Half Moon Bay, San Mateo County.

**AN ARMORED SCALE**

*(Rhizaspispidiotus dearnessi)*

**Florida:** All stages on some partridge-pea (*Cassia* sp.) plants at Stuart, Martin County.

**ARMORED SCALES**

**Florida:** Lepidosaphes maskelli severe on stems and leaves of variegated juniper inspected at nursery in Win- ton Haven, Polk County. *Gymnosara echeaehman*; adult damage severe on leaves of bilbergia at nursery in Brooksville, Hernando County; plants under quarantine. Adults infested 60 of 100 bromeliad torch plants at nursery in Lake Worth, Palm Beach County. *Pseudononidia clavigera* moderate to severe on all common and susceptible nursery plants at nursery in Tampa, Hillsborough County. **California:** *Diaspis coccus* heavy on palm in Carpinteria, Santa Barbara County. *D. echinocacti* heavy on cactus nursery stock in Yucca Valley, San Bernardino County; very active in 1967. *Acanaspis roseae* heavy on roses in Gonzales, Monterey County. *Parlatoria oleae* heavy on lilac nursery stock in Santa Maria, Santa Barbara County.

**CAMPHOR SCALE**

*(Pseudamidina duplex)*

**Florida:** Found on stems and leaves of camellia at nursery in Suwannee River area, Gilchrist County, November 30; all females parasitized. This is a new county record.

**YELLOW SCALE**

*(Aonidiella citrina)*

**Florida:** All stages moderate on leaves on 40 of 200 Japan fatsia plants at nursery in Apopka, Orange County; controls recommended. This is a new host record.

**WHITEFLIES**

**New Mexico:** Heavy on poinsettias in 2 commercial greenhouses in northern area; foliage discolored.

Compiled from information furnished by the U.S. Department of Agriculture, university staffs and WTT readers. Turf and tree specialists are urged to send reports of insect problems noted in their areas to: Insect Reports, WEEDS TREES AND TURF, 5900 Euclid Ave., Cleve-
land, Ohio 44109.