

What's ahead for vinyl makers: Slowdown or end of the road?

Uncertainty beclouds industry as OSHA weight testimony on proposal for sharp cut in VCM emissions within plants

Scores of chemical and plastics companies will be on tenterhooks during the next few weeks or months while Secretary of Labor Peter Brennan and his associates are deciding what safety standards will be required in U.S. plants that produce vinyl chloride monomer, process it into polyvinyl chloride resins and mold those resins into plastic pipe, phonograph records, sports car tops and vinyl flooring.

The immediate question: How much VCM gas should be permitted as an air contaminant in all those plants? Until this question is resolved, management people in this \$65-billion/year business will not know whether to invest additional capital in plant expansion, research and marketing programs. Moreover, their suppliers will not be able to project how much ethylene, chlorine, plasticizers and molding equipment will be needed.

In last week's public hearing in Washington, it became clear that this vinyl factory hygiene matter has become the biggest and most controversial case that has yet been faced by the Labor Dept.'s three-year-old Occupational Safety and Health Administration. Because some vinyl plant workers have contracted a rare and fatal cancer of the liver (angiosarcoma), OSHA in April issued a temporary regulation that the VCM concentration in the air in such plants must not exceed 50 parts per million. Now the agency is proposing as a permanent rule that the limit be set at "no detectable level," which in practice would mean a maximum of only about 1 ppm.

Costs, Jobs, Health: Such an "excessively and unrealistically restrictive" standard is not technologically feasible, and its adoption "would shut down the industry," according to Anton Vittone, president of B. F. Goodrich Chemical Co. and chairman of a special PVC standards committee set up by the Society of the Plastics Industry.

As the industry's principal spokesman in last week's hearing, Vittone proposed that the present temporary emergency standard of 50 ppm. for PVC plants be lowered in several stages to 25 ppm. by Oct. 5, '75, with further imposition of a time-weighted average limit of 10 ppm.

Standards for VCM production, he said, could be more restrictive—10 ppm. by Oct. '75, and a time-weighted average maximum of 5 ppm.

Meeting these suggested standards would be costly and difficult, Vittone said. "These proposals represent ambitious, difficult levels of operational exposure dependent on large expenditures of money, reduced capacity, and the development of technology not currently in hand."

But trying to meet the no-detectable-level standard would be prohibitively expensive if not impossible, he warned. Putting OSHA's proposed regulation into effect, he added, "could displace not only the 6,500 VCM and PVC production workers but also hundreds of thousands of other employees in companies that use PVC."

Cutbacks and Renovation: A contrary view was presented in a Labor Dept. report asserting that the no-detectable-level standard's only over-all impact on the PVC industry would be curtailed production. The report's authors conceded, however, that some "marginal" companies might need federal loans to finance the plant alterations necessary to meet the more stringent standard.

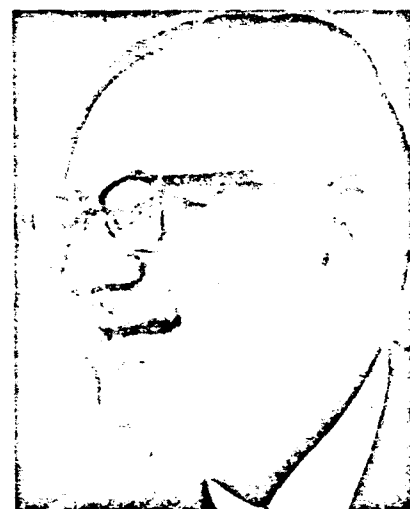
That standard was defended at the hearing by Daniel Boyd, director of OSHA's Office of Standards Development—where OSHA staff members will analyze the exhaustive and conflicting testimony given by the 147 scheduled witnesses during the five-day hearing.

Boyd emphasized that he regards the no-detectable-level standard as only a proposal, but added: "It represents our best judgment based on the information available to us on May 10. We do not claim to know all the answers to all the problems associated with employee exposure to VCM. I am . . . asking for your help, your input, so that we can promulgate a standard based on the best and most recent information available."

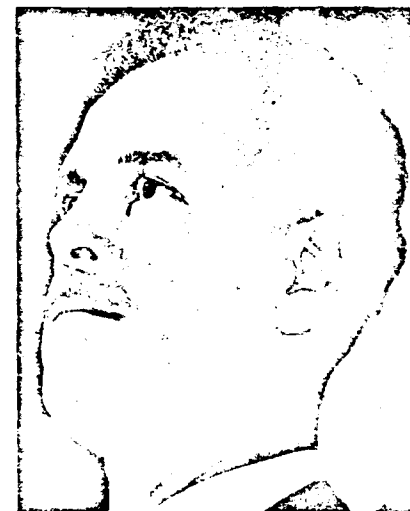
Gas Masks, Chromatographs: Under the Labor Dept.'s proposal, the first step for employers would be to reduce VCM emissions by adopting new engineering controls and production methods "as soon as feasible." Boyd explained that



OSHA'S BOYD: 'As soon as feasible' will depend on cost and available technology.

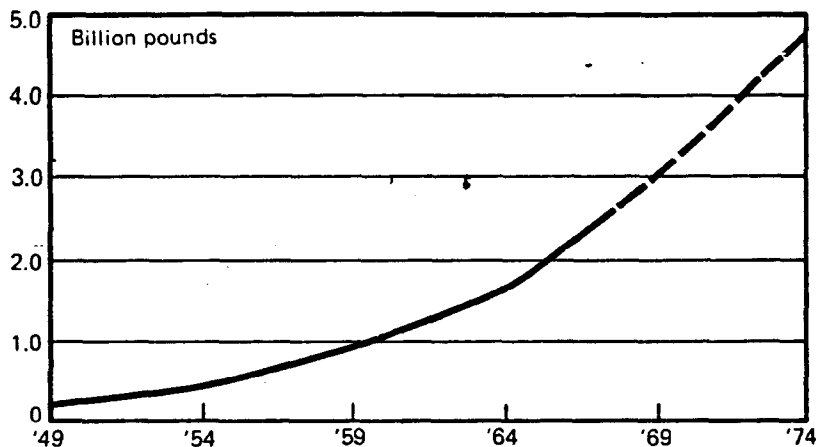


SPI'S VITTO: No-detectable-emission standard 'would shut down the industry.'



URW'S BOMMARITO: 'The medical facts are in, and the problem is now political.'

PVC success story: 25-year U.S. growth averages 12.74% a year



Sources: U.S. Tariff Commission; Society of the Plastics Industry; CW estimate for '74.

feasibility refers to both technological and economic considerations: "On the one hand, does the technology exist that would allow the employer to achieve compliance? And on the other, What are the costs associated with the application of these technologies?"

If the very low level of VCM concentration could not be attained immediately, employees would be required to wear air-filtering devices known as continuous-flow and demand respirators. Commented Boyd: "We recognize that respirators are not popular with employees and that employees may have difficulty wearing them 40 hours a week. However, in balancing the feasibility of engineering controls and work practices, respirators and the hazards associated with VCM, we feel that respirators are a necessary temporary means of avoiding employee exposure to VCM."

As to in-plant monitoring, OSHA shied away from designating any specific techniques for measuring VCM concentration in the air. "But a gas chromatograph is fully capable of measuring VCM at the levels required," Boyd stated.

Methods Are Optional: OSHA's proposal is essentially only a performance standard, Boyd pointed out. "We recognize," he said, "that each employer should be allowed to utilize the engineering controls and work practices that are best suited for his plant. However, the proper application of ventilation systems and further enclosure of exposure sources appears to be a rational approach. It is entirely possible that a reduction of the 10-12% unreacted monomer content, which often occurs at the polymerization

stage, will reduce some of the VCM exposure problems associated with PVC."

More aggressive support for the no-detectable-level proposal came from organized labor. Union officials denied that such a standard would necessarily result in any extensive shutdown of PVC plants, but declared that even the loss of many jobs would be preferable to continued exposure of employees to higher VCM concentrations.

Peter Bommarito, president of the United Rubber Workers and chairman of AFL-CIO's health and safety committee, demanded Congressional investigation of industry efforts to stir up "hysterical" opposition to OSHA's proposal.

"Today, this nation will be blackmailed," Bommarito averred. "Management will tell you that the proposed standard—which they assume without hard data is not feasible—means an end to 1.6 million or more jobs and national disaster. This country survived for nearly 200 years without PVC and we can survive in the future without it."

Bommarito suggested the possibility of a health hazard that had not previously been discussed in connection with PVC: the chance that even a trace of VCM in a pregnant woman's bloodstream might damage the fetus.

Evaluating the Evidence: Bommarito asserted that "the medical facts are now in, and the problem is now in the social and political arena." But industry representatives said that the medical and scientific data are far from conclusive.

In fact, one industry spokesman contended, it's conceivable that OSHA's present temporary standard of 50 ppm.

may be entirely adequate. Researchers may never know whether it is or not, he continued, because it takes 11-20 years for angiosarcoma to develop, and so it's possible that the liver ailments turning up now may have been initiated before manufacturing operations provided the present degree of protection for workers.

Nevertheless, OSHA is expected to rely to a considerable extent on data developed by Director Cesare Maltoni of the Istituto Di Oncologia, a tumor research institute, in Bologna, Italy, and by scientists at Industrial BIO-TEST Laboratories (Northbrook, Ill.). The work at Bologna was sponsored by several large European producers of VCM; the studies at Northbrook were commissioned by the Manufacturing Chemists Assn. In both cases, the researchers have reported that angiosarcoma was contracted by rats and mice that had been exposed to VCM at various levels down to 50 ppm.

"On the basis of what facts we have been given," testified Dr. Herman Kraybill of the National Cancer Institute, "VCM appears to be a potent hepatocarcinogen. If man responds to low-level exposure to VCM as has the rodent, a low-level continuous exposure of 50 ppm. for man would have a high probability for inducing liver cancer."

Deciding on Dickey Data: Jerome Heckman, general counsel for SPI, summed up the industry feelings as to the inadequacy of present scientific information: "Many of these decisions will necessarily have to be based on the rules of probability rather than irrefutable fact. Much of the scientific data obtained by researchers to date is quite inconclusive. A great deal of data remains to be acquired and evaluated. At this precarious state of our knowledge, we believe that misplaced reliance on mere suspicions rather than proved data, or precipitous and emotional reaction to such incomplete information, together with a narrowly construed interpretation of interests, could lead to major economic consequences."

As the hearing ended, Washington observers were predicting that OSHA would stick with the no-detectable-level limit, with some leeway in timing for older plants to install the necessary safeguards.

Meanwhile, the vinyl industry is operating at close to 100% of capacity, and numerous plant expansion projects are under way. If producers can meet the new standards without an exorbitant increase in manufacturing costs, it would seem reasonable to expect PVC demand to keep right on growing at 10-15%/year (chart, above).

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JULY, 1974

THE PVC CONTROVERSY

* The Battle Lines Are Drawn

by NORRY HASTINGS,
Editor

Polyvinyl chloride (PVC) is a versatile plastic which is used in thousands of applications in products including toys, phonograph records, upholstery, pipe, packaging, shoes, luggage, inflatables, swimming pools, and a myriad of other day-to-day essentials.

The PVC manufacturers and its converters (processors) have suddenly



been confronted with a devastating dilemma. On April 5, the Occupational Safety and Health Ad-

ministration (OSHA) adopted a temporary, six month emergency standard lowering the exposure cell-

ing of vinyl chloride monomer (VCM) from 500 to 50 parts per million pertaining to monitoring and enforcing.

Starting on June 25 OSHA started hearings to determine at what level to set the exposure ceiling of VCM. Labor is strongly advocating zero concentration. (The adoption of this could shut down all vinyl chloride plants.) Industry is pushing for no lower than

(Continued on page 20)

* PVC Ban Could Cost 1.6 Million Jobs

Preliminary results of an economic impact report conducted for the Society of the Plastics Industry by the economic consulting firm of Arthur D. Little, Inc., indicate that at least 1.6

million Americans may lose their jobs if an unrealistic occupational health regulation, limiting worker exposure to vinyl chloride, forces a shutdown of the industry.

Little says a minimum of 1.6 million jobs would be lost if the producers of vinyl chloride, an industrial chemical, and polyvinyl chloride (PVC), a widely used plastic resin, were

forced to shut down because the technology does not exist to meet a "no detectable level" of exposure. In addition, the cost in terms of lost sales and

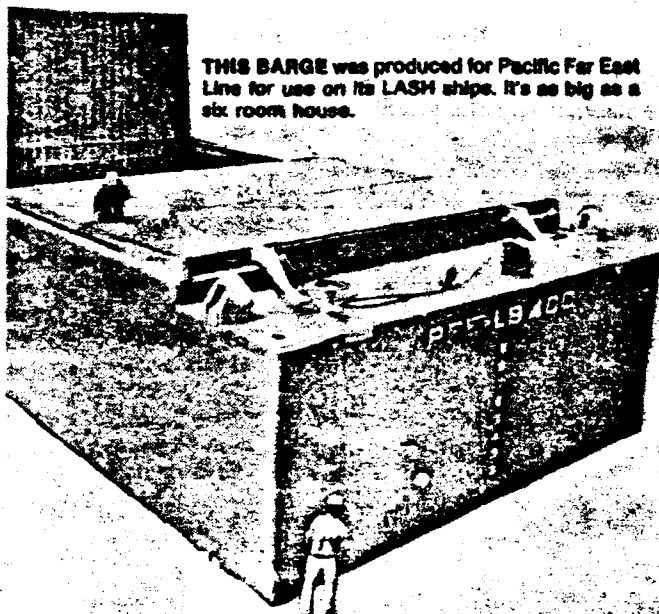
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NORTHROP IS CLOSING ITS HUENEME BARGE PLANT

On the heels of claims and counter-claims and suits and counter suits, Northrop Corp. announced on June 25 the cessation of all production at its Northrop-Hueneme fiber glass barge plant. The phasing out and liquidation will be completed within 90 days.

The dispute resulted when Pacific Far East Line stopped accepting delivery of barges in April. Northrop has started action to force acceptance of delivery. Pacific Far East instituted a suit for \$102 million claiming non-conformance in the delivered barges.

John Flores, the manager of the Northrop Hueneme operation, stated



THIS BARGE was produced for Pacific Far East Line for use on its LASH ships. It's as big as a six room house.

that a counter suit is now being processed to force Pacific Far East to honor the terms of their contract. He said that 131 of the initial order for 200 barges have already been delivered and accepted.

At peak production, the construction of these barges used 50,000 pounds per week of polyurethane foam. The processes used included spray up, hand lay up, foaming bonding and sandwich constructing.

The major West Coast suppliers who will be affected by Northrop closing are: Cargill Resins in Lynwood, Calif. - Polyester Resin; API Systems in Pacoima, Calif. - polyurethane foam.;

(Continued on page 20)

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PVC Ban. . .

(Continued from page 1)

production would amount to at least \$65 billion.

Employing an input-output economic model for its analysis, A.D. Little was able to estimate the impact of the PVC resin industry itself, and in addition the effect on other major segments of the U.S. economy by defining the interaction of the PVC industry with primary, secondary and final demand markets.

For example, the unavailability of PVC resin would have a major effect on the automotive industry, which utilizes PVC in the form of insulated wire and cable, component parts, upholstery and many other products.

The automotive and construction industries would be the hardest hit, with losses respectively of at least 600,000 lost jobs and \$35 billion in lost sales; and for the construction industry, at least 500,000 lost

jobs and \$14 billion in lost sales.

In May, the Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor proposed that exposure of employees to vinyl chloride monomer (VCM) in workplace air should be reduced to "no detectable level." VCM has been linked in recent months with higher than normal incidence of angio sarcoma of the liver, a rare type of cancer, among previously highly-exposed workers.

"The effect on the nation's economy and on the social order in terms of the human hardship it would cause would be catastrophic," said Ralph L. Harding, Jr., president of SPI. "We expect that the final results from A.D. Little will show a potential loss in excess of two million jobs. This is all the more regrettable in light of the fact that the industry is taking every step possible to reduce worker exposure to VCM.

"While the VCM and PVC industries fully recognize their obligation to reduce worker exposure to as low a level as is possible, the proposed OSHA standard is technologically infeasible to achieve, even with the highly sophisticated methods of implant control that have been developed by the industry over the years," Mr. Harding said.

"If the proposed 'no detectable level' standard is adopted," Mr. Harding continued, "the vinyl chloride and polyvinyl chloride resin producing industries will be forced to close down immediately."

Sock it to Em!

While many esoteric formulae for managing and purchasing in a shortage economy were presented at a panel discussion at the Los Angeles Area Chamber of Commerce, Richard McKibben, secretary and plant manager of Modern Plastic Co., Compton, Calif., offered one time-honored, yet simple approach: browbeat the supplier.

"We had one purchase order returned saying it couldn't be honored," said the manager of the custom injection molding plant which employs 180. "I then called the customer and told him our predicament. Both of us got together and harranged the supplier. The result is we got enough material to keep the customer out the the soup for a couple of months.

Battle Lines. . .

(Continued from page 1)

50 PPM. What started the whole thing was a February 15 hearing which followed a disclosure by B.F. Goodrich Co. of the deaths of several employees from angio sarcoma of the liver which is described as a rare form of cancer. The average exposure time for the Goodrich workers was 20 years.

Since the hearing, some employees of Union Carbide, Firestone, and Goodyear have also been reported to have died of angio sarcoma of the liver.

Although tests on animals so far have not caused tumors at concentrations of 50 PPM, there

are suspicions that even this level is excessive and hence the battle lines are drawn.

It should be clear that all cases of detected angio sarcoma have been employees of resin producers and not fabricators. To date OSHA has detected zero concentration of VCM in fabricators' plants. However, the SPI Committee which is supporting the industry position needs all the facts. If your plant has been monitored, send a report of the findings to Lloyd Darden, Western Manager, The Society of the Plastics Industry, 611 S. Catalina Street, Los Angeles, California 90005.

Northrop. . .

(Continued from page 1)

Hastings Plastics Co. in Santa Monica, Calif. - polyester adhesives; Owens Corning Fiberglas, Los Angeles - fiber glass mat and woven roving; and Lasco Industries, Anaheim, Calif. - molded corrugated fiberglass sheets.

Northrop's Chad Brown will handle liquidation of inventory.

Potential customers for the large inventory of materials and plant equipment should contact Brown at (805) 488-6461.

The fiberglass honeycomb techniques used at Hueneme were originally developed by the company's Ventura Division in the manufacture of fiberglass components for aircraft.

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Assistant Deans Named At L

Three new assistant deans in academic affairs have been appointed at the University of North Carolina.

Dr. George Lensing, associate professor of English, has been named assistant dean for honors. Dr. Lewis Lipsitz, professor of political science, is the new assistant dean for experimental and special studies. Dr. Thomas Stein, associate professor of recreation administration, has been named assistant dean in the General College. All three will continue to teach.

As assistant dean of honors, Lensing will work with the vari-



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ous honors programs for students in the General College (freshmen and sophomores) and College of Arts and Sciences (juniors and seniors).

Lipsitz will oversee the interdisciplinary bachelor's degree program and will work with de-

partments in developing and evaluating educational experimentation.

Stein will assist Associate Dean Donald Jicha with the academic advisory system in the General College and also will serve as a student advisor.

expanded research to find out how hazardous its use may be to the public.

Three members of the chemistry faculty at Duke University have received promotions, including one to the rank of full professor.

Advanced to a full professorship is Dr. James F. Bonk. Drs. Charles H. Lochmuller and Ned A. Porter have been promoted to associate professors.

Bonk was voted one of the ten "outstanding" professors by Duke undergraduates in 1966. He teaches advanced beginning courses in chemistry, serves as supervisor of freshman instruction in the chemistry department, as departmental executive officer and is the academic adviser to Duke athletes.

Lochmuller, a graduate of Manhattan College and holder of master's and Ph.D. degrees in chemistry from Fordham University, came to Duke in 1969.

Porter, also at Duke since 1969, is a graduate of Princeton University and, earned his Ph.D. at Harvard.

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Dr. Robert G. Parr, former chairman of the chemistry department at Johns Hopkins University, has been named William Rand Kenan Jr. professor of chemistry at the University of North Carolina.

The appointment was announced by Chancellor Rerebee Taylor following approval of University President William

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Threat Of Cancer Is Seen In Fire-Resistant Pajamas

By BETTY W. MUSHAK
Herald Staff Writer

PINEHURST — A doctor attending a conference in Pinehurst said Tuesday that making children's pajamas flame resistant may expose children to a substance known to cause cancer.

Dr. Benjamin Van Duuren called for an investigation of the possible dangers by the Food and Drug Administration.

Van Duuren spoke at a conference on the public health implications of components of plastics manufacture. The conference, which ends today, is sponsored by the National Institute of Environmental Health Sciences.

Dr. Pat Lombardo of the Food and Drug Administration (FDA), who is also at the conference, said that in practical terms, what Van Duuren suggests is not likely.

Van Duuren said additives used to make the pajama cloth permanent press and flame resistant could react chemically with perspiration and urine and release a substance that is known to cause cancer.

Lombardo said that substances used to treat cotton actually combine with the cotton and no longer exist on the material in a form that would react.

In synthetic fibers, the flame retardants are usually added

while the fibers are molten and combined so that it is unlikely they leach out, Lombardo said.

In addition, Lombardo said, the substances put on cloth after it is woven to make it flame retardant are not permanent.

"They all wash out," he said. "Even the reactive ones wash out."

The things given off are considered to be harmless in the substances now approved for use in flame retardants, Lombardo said.

The cancer-causing agent, called BCME, was identified through vinyl chloride workers who had cancer. Dr. David Rall, director of the National Institute of Environmental Health Sciences in the Research Triangle Park, recently testified before a congressional committee on the need for limiting exposure of workers to BCME.

Rall said BCME is used in one step of a certain type of plastics manufacture. He said it is possible for worker exposure to be cut to zero with proper controls.

In a presentation Tuesday, Van Duuren questioned the safety of trichloroethylene (TCE), a gas used in aerosol propellants and oral surgery.

TCE was once used as a general anesthetic, but some patients developed liver

problems and it was dropped.

Operating room workers exposed to TCE showed an increase in stillbirths, miscarriages and certain types of cancers.

TCE, which resembles vinyl chlorides in some of its activities in the body, is widely used in industry and in some dry-cleaning operations. Van Duuren called for vastly

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Expanded Research Is Urged On Vinyl Chloride Effects

A whole lot more knowledge is needed about what the various kinds of plastics do to the body and what the body does to the plastics before really reliable artificial parts will be the long-term answer for some health problems, King said.

Exposure to potential hazards is being most closely watched among workers in industry like those at the B. F. Goodrich plant. G. F. Cohan, senior product manager of Goodrich, outlined for the conference the steps that are being taken to minimize and monitor workers' exposure.

Concerted efforts are under way now to find out whether any of the ingredients in plastic food packaging gets into the food and whether the plastic bases of latex and vinyl paints may present potential dangers. The food studies are going on at Rutgers and the paint studies were mentioned by Dr. Irving Selikoff, who is a authority in inhalation toxicology.

Inventive Americans

WASHINGTON (AP) — There is always something new under the sun that shines on the U.S. Patent Office, which receives more than 100,000 patent applications and issues more than 70,000 patents every year. Over 3.8 million patents have been issued since 1790, and many of the nation's leading companies and whole new industries have been based on these patented inventions.

Vinyl chloride has been linked to certain liver cancers and to a disorder in which the bones in the fingers dissolve. It is also suspected as contributing factor in certain kinds of kidney, lung and ear disorders.

The conference in Pinehurst, which opened Monday and ends Wednesday, is sponsored by the

NEW YORK (AP)—Sales, closing price and net change of the fifteen most active stocks traded on the NY Stock Exchange.

Sony Corp	373,800	5 3/8	+ 3/8
ESB Inc	297,200	41 3/4	+5 1/4
Evans Pk	120,000	6 1/8	+1 1/2
Am Tel & Tel	114,200	42 3/8	+ 3/8
Sto Oil Cal	103,000	25 1/2	- 1
Am Home	100,000	34 3/8	- 7/8
Kresge SS	95,500	29 1/4	+ 1/8
Transam Cp	92,700	6 1/2	+ 1/4
Unit Aircraft	88,400	24 1/4	-1 3/4

NEW YORK (AP)		Today	Prev. day
Advances		243	404
Declines		1144	959
Unchanged		335	342
Total issues		1724	1725
New 1974 highs		5	6
New 1974 lows		146	64

RALEIGH (AP) — North Carolina egg markets were steady Monday. Supplies barely adequate, demand good. Weighted average prices for small lot sales of consumer grade eggs in carton delivered nearby outlets: Grade A large whites 59.73, medium whites 50.39, small whites, 39.34.

CHICAGO (AP) — Monday:

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