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August 21, 1997

National Toxicology Program
Report on Carcinogens MD-WC-05
P.O. Box 12233
Research Triangle Park, NC 27709
ATTN: Dr. C. W. Jameson

Dear Dr. Jameson:

This letter is in response to your notice from the FEDERAL REGISTER Vol. 62 No. 133 dated 7-11-97. My hobby for the last seven years has been an attempt to increase public awareness on the heavy metal issue. I have presented nearly a dozen papers on this subject nationally and internationally. At one conference a paper entitled *TOXIC USE REDUCTION WITH "GREEN" HEAVY METAL BASED PIGMENTS* was acclaimed "best paper" award. I have traveled to Cairns, Australia and Brussels, Belgium to speak on this topic.

There appears to be ample scientific evidence to consider DELISTING CADMIUM & CADMIUM COMPOUNDS from the Report on Carcinogens, Ninth Edition. I refer to the details presented in the SHIPHAM REPORT – triplicate copies are attached for each of the scientific committees that will be involved in the review process.

The SHIPHAM REPORT is a study conducted over a 40 year period by the U.K. government on the residents of the village of SHIPHAM where the presence of elemental (soluble) cadmium was found to exist in their soils. Other than a few minor cases of kidney dysfunction, they found the population of Shipham had a longer life expectancy than the rest of the U.K. If cadmium is or was carcinogenic, whey did it not show up in this study performed on humans – not laboratory animals?

Pigmentary forms of cadmiums are the safest forms of the heavy metals that can exist. In the chemical reaction of preparing the compounds, the elemental heavy metals are TRANSFORMED into entirely new materials and no longer exist as that heavy metal. These should also be delisted.

Triplicate copies of my paper are also attached for reference to your committees. The ecological benefits of promoting wide spread usage of these products is covered therein.

I will be out of the country until mid-September and will call you upon my return to further discuss this topic. In my absence you may direct your inquiries to the attention of Mr. John Ward.

Sincerely,

Robert D. Swain

Robert D. Swain
Chairman

RDS:kf
A:\natltoxicologyprog

Attachments

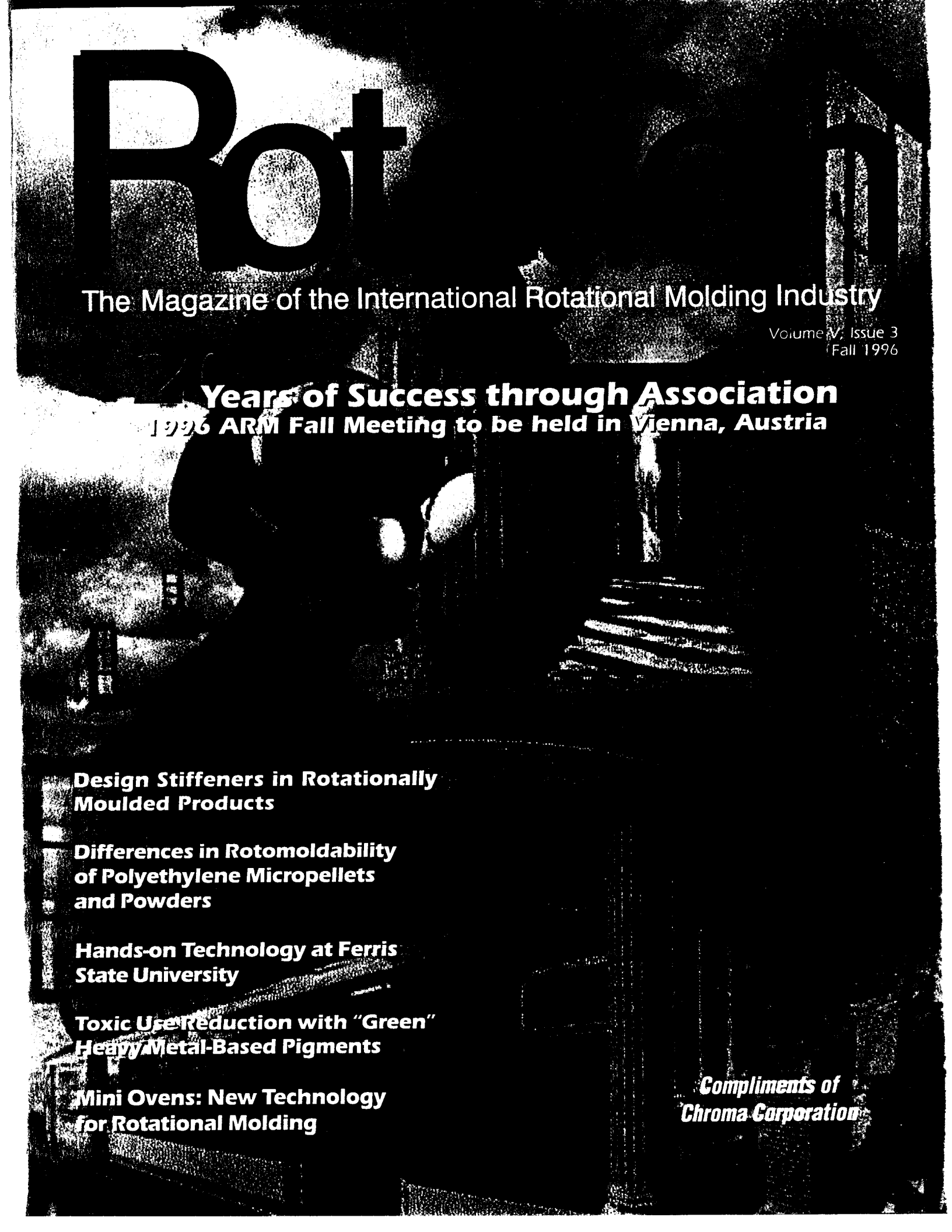
Cc: Rich Gottwald @ SPI
Larry Robinson @ CPMA
Ralph Helfer @ Hanna
John A. Ward @ Chroma

NOTE: Rich Gottwald. We should make comments if only to reinforce the above. CPMA did not know what they were going to do. You might check with Larry Robinson before drafting to learn how we can support their stand . . .?

The following journal article was attached to Robert D. Swain's comments. Due to copyright infringement laws we cannot display it. We have listed the citation for your information.

National Toxicology Program
Report on Carcinogens Group

Inskip H, Beral V, McDowall M. 1982. Mortality of Shipham residents: 40-year follow-up. Lancet 1:896-899.



Rot

The Magazine of the International Rotational Molding Industry

Volume V, Issue 3
Fall 1996

Years of Success through Association

1996 ARM Fall Meeting to be held in Vienna, Austria

Design Stiffeners in Rotationally Moulded Products

Differences in Rotomoldability of Polyethylene Micropellets and Powders

Hands-on Technology at Ferris State University

Toxic Use Reduction with "Green" Heavy Metal-Based Pigments

Mini Ovens: New Technology for Rotational Molding

Toxic Use Reduction with "Green" Heavy Metal-Based Pigments

by Robert Swain, Chroma Corporation

For the past five years, my hobby has been to increase public awareness on the heavy metal issue in the United States. The heavy metal issue is a complex topic analogous to an old tale from India of the blind men that were each permitted to touch a different part of an elephant. Afterwards, they were asked to describe what they had touched. Those who recall the tale know that no one came close to accurately describing the elephant.

In many aspects, the global heavy metal issue is similar to the elephant. The regulators and legislators of each state, country, and continent have touched only a segment of the heavy metal issue. As we stand on the brink of globalization and standardization of the plastic compounding industry, confusion reigns supreme in the heavy metal arena; and there is a need to look at a picture of the entire elephant before making a decision as to whether or not these pigments pose a risk.

When I first entered the plastics industry, cadmium pigments were acceptable for direct food contact under the F.D.A. GRAS (Generally Recognized As Safe). In Europe, the "Old French Regulation" permitted the same. What went wrong over the past twenty years? What caused this confusion? How do we resolve it?

Simply put – we as a world society have allowed anecdotal accusation to rule over the legislative and regulatory processes. Corporate CEOs and presidents have allowed themselves to become pawns of public perception.

A few years ago, a group of northeast governors banded to form a coalition for political gain. To create an image of legislative productivity, they introduced a "CONEG" MODEL BILL to reduce toxics in packaging. Although it sounds like a noble cause, no one asked if the bill was necessary or what problem it would resolve. Meaningful input from the pigment and concentrate industries was blocked. When California saw this model bill, they reacted in a very responsible manner. They passed a mandate to study the issue and to learn if heavy metals posed a threat to health, safety, or the environment. Fifteen heavy metals were included in this study.

Meanwhile, eighteen states passed their version of the CONEG bill without identifying the toxicity problem, and they too became pawns of public perception. What did they get? They got a bill that was confusing and vague, impossible to enforce, and that varied from state to state.

After two to three years of investigation and testing, California released their study of Heavy Metals in Packaging. The study concluded:

- Heavy metals do not constitute a threat to ground water surround ing landfills.
- Regarding incineration, they do not recommend restrictions of metals in packaging without any evidence of ash problems being caused by packaging containing heavy metals.
- There is not cause for alarm at the present time and additional studies are not warranted.

The scope of California's study was wide – it included fifteen heavy metals and included leachate and incineration studies from within their state as well as other states. All of the California landfill leachate data showed metals below their STLC (Soluble Threshold Limit Concentration) levels. This is supported by the SOBOTKA Report showing leachate from forty-four sites located in ten different states had no metals exceeding their STLCs.

The California report is well documented with over twenty-five scientific references. Their scientific approach to this issue has created credibility with, and is gaining support of, the manufacturing sector of our country. California has demonstrated its role of leadership in environmental concerns.

Now a look at the European community. What problems caused them to abandon the OLD FRENCH CADMIUM REGULATION? Researching the reasons for the adoption of the 91/338/EEC, it was learned that:

- POLLUTION of the environment by cadmium was felt to be a serious and growing threat.
- POLLUTION of the food chain could be related to total manufacturing and disposal of any cadmium product.
- All cadmium products present an equal risk according to cadmium content.

Has the European community joined the global chess game by allowing themselves to also become pawns? It appears that way since the day 91/338/EEC was passed.

Now another look at the elephant mentioned earlier. Let's not examine selective parts like the blind men did. We'll examine the entire beast. What you will note is that the products we produce from these inorganic pigments are part of the solution rather than the cause of environmental problems.

Heavy Metal Elephant

- Major player in recycling
- Traditional parts
- "Newly" discovered parts

The manufacturers of heavy metal-based pigments have been practicing recycling in its highest form for years. In the U.S. their feedstocks consume 10-15,000,000#/year of toxic by-products from allied industries. These unbound forms are converted into bound forms that are useful to society. At the same time, the heavy metal becomes non-toxic, non-extractable, non-soluble, and non-bioavailable.

This alone should create a desire to expand the uses of these materials, but let's look at the rest of the elephant.

The "traditional parts" are:

- brilliance
- permanence
- heat stability
- economics

Focus specifically on the new polymeric products of metallocene technology, and a specific balance of physical properties that sell at a premium is found. Since all pigments can be considered as "contaminants," it is desirable to qualify those pigments which actually help to preserve the physical properties of the metallocenes.

Toward this goal, the inorganic pigments appear to offer several advantages. The high specific gravity of these products offers a desirable surface area to weight ratio that appears to exhibit better impact strengths than several of the organics tested. Additional testing is required before our industry advocates widespread use of the traditional heavy metal-based pigments in metallocenes.

New, recently discovered parts:

- require less energy to produce as pigments;
- require less energy to manufac ture as color concentrates;
- require less energy to fabricate into plastic parts;
- improve dimensional control of plastic parts; and
- reduce warpage tendency.

This is not to mention that they are also lower in cost.

Evaluate the risk assessment in the five stages of use of heavy metal-based products in the rotational molding industry and we find the following:

- Manufacture of pigment – the risk lies with failure to convert toxic feedstocks into pigmentary forms.
- Compounding of concentrate – no risk. We can dispose of our raw materials as non-hazardous waste in ordinary landfills (ref. EPA).
- Fabrication of part – refer to G.E. Study. No risk due to volatilization.
- Use of part – history of past F.D.A. use during the 70's...and extraction of only 5-7 parts per billion soluble cadmium in plastic parts.
- Disposal of part – California cites no problem.

Ironically, both the CONEG and the European communities have adopted legislation which increases the risk of creating damage to our ecological system. The so-called "heavy metal replacements" are organic in nature and have been accepted without trial or testing. Do the increased solubilities and extractabilities of these pigments place ground water contamination at a higher risk? Have their gaseous products of incineration been tested for their deleterious impact on our environment? Not only have we allowed the haphazard adoption of this legislation, we have endorsed the creation of a business climate that discourages investment of heavy metal research dollars, which stifles creativity.

When we look at the picture of the entire elephant, it can be noted that heavy metal-based pigments are a preferred material and a responsible choice in a more environmentally conscious world. So how do we resolve the world-wide dilemma that exists today? Resolution can be found in five big "elephant steps" as follows:

- RECOGNIZE the ecological benefits offered by pigmentary forms of heavy metals.
- PROPOSE and SUPPORT the adoption of a reasonable global or international standard.
- CREATE widespread use of heavy metal-based pigments.
- REMEMBER that heavy metal-based pigments are not heavy metals.
- ERASE public perception – Replace it with responsible regulation. Create a legislative environment that encourages heavy metal research and development.

Let's revisit the "GREEN" qualities of these inorganic pigments, and remember that heavy metal-based pigments are a preferred material and a responsible choice in a more environmentally-conscious world.

REMEMBER – the real heavy metal problem is our not speaking up!

Publicity Release

McHenry, IL - Chroma Corporation announces construction of a new plant to compound precolor ***LLDPE and METALLOCENE Polymers for the Rotational Molding Industry.***
This move enables Chroma to become a full-service color house offering the most complete line of colorants available in the industry today. These forms are:

- Dry Color - Unitized and Bulk
- Precolor Compound - Pelletized and Ground
- CHROMA-SPHERES - Micropelletized Precolor Compounds

The plant will include a state-of-the-art molding and physical testing laboratory as part of Chroma's on-going commitment to technological excellence in providing innovation in product development and service to its customers.

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