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swimming pool products, inc.

MANUFACTURER OF SWIMMING POOL ENAMELS AND RELATED SPECIAL PRODUCTS

1855 HIGHWAY #206 • SOUTHAMPTON, NEW JERSEY 08088

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enamel



To: Mr. Terry Black, Chief of Regulations
Pennsylvania Department of the Environment
Division of Air Quality Management
PO Box 8468, 400 Market Street
Harrisburg, Pennsylvania 17105-8468

Date: 5/27/04

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JUN 1 - 2004

Re: **Ozone Transport Commission/ VOC Regs - AIM Rule
Application for Pennsylvania Variance under § 130.606**

Specific Grounds upon which variance is sought:

- ◆ **Very small AIM NJ Manufacturer** - Producing less than 25,000 gallons of Swimming Pool paint annually. Our entire Pennsylvania total sales of swimming pool paints represents more than 50% of our entire production (i.e., an average of 13,145 gallons/yr for the past 3 years). Without your approval of a Pennsylvania Variance for us, we would experience severe economic hardship and loss of business.
- ◆ **Approval of Variance for SAUSEA would have Negligible Impact on Projected VOC Reduction for Pennsylvania** - According to the "Control Measure Development Support Analysis of Ozone Transport Commission Model Rules" report, as submitted to the Ozone Transport Commission, Washington, DC by E. H. Pechan & Associates of Springfield, Virginia: (See Executive Summary, attached.):

The enactment of the new OTC rule for all AIM Coatings in Pennsylvania represents a projected 37+/- ton per day (tpd) reduction in VOC emissions. (See Figure ES-1, OTC VOC Model Rule Benefits by State within the OTR for 2005 in above-mentioned report).

Currently, one gallon of our swimming pool paint produces roughly 4.99# of VOC (under the current allowable 600 g/l VOC rule). Since the total gallons of our swimming pool paint sold into Pennsylvania yearly is, on average, 13,145 gallons, then it follows that the total annual production of VOC by our products in Pennsylvania is 65,593#, or 32.8 tons annually or 0.09 tons per day. The new OTC VOC regulations (340 g/l) would result in a gallon of our paint containing 3.17 pounds of VOC for a net reduction of 1.82 pounds/gal. Then, our total production (13,145 gallons) times the net savings of 1.82#/gal would be a total reduction of 23,924#/year or 11.96 tons annually or .032 tons/day - in effect, implementing these restrictions on us or allowing us time for reformulation (under a temporary/limited variance) **would impact the state of Pennsylvania's projected VOC reductions less than one-tenth of one percent**; while implementing these restrictions on us, at this time, would be severely detrimental

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To: Mr. Terry Black, Chief of Regulations
Pennsylvania Department of the Environment

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to our continued success and the success of the many Pennsylvania business that we supply.

- ◆ With an approved variance, we - as a **small manufacturer of limited resources** - will have the extra time needed to reformulate and reach the 340 g/l requirements for our swimming pool paints. Without the approved variance, our small 30 year old family-owned business (our entire U.S. manufacturing company) will be out of business.
- ◆ **Most large paint manufacturers are not bothering to reformulate rubber and vinyl base swimming pool coating**, switching rather to the epoxy ones, on the premise that these coatings are good enough and they are already producing them extensively for industrial and other requirements. Nor will they invest their R & D resources in a product of such limited application. We, on the other hand, have our entire past (and future) success based on the superior performance of vinyl and rubber formulations over epoxies in swimming pool formulations. Our niche in this field will be destroyed, if we are forced to solely produce epoxy pool paints (which now represent less than 5% of our total swimming pool paints production). Our research to date has led us to believe we can adapt these coatings but we are not yet ready to bring these new products to market.
- ◆ **Without a viable rubber base swimming pool paint in Pennsylvania, sandblasting to change paint types will be the only option before painting with epoxy paint.** Further, if we are not allowed to sell our rubber base and vinyl base swimming pool paints in Pennsylvania in 2005, all those swimming pools that are currently painted with our rubber base paint would have to be sandblasted (**creating a great deal of particulate pollution**) before they could be painted with any pool paint manufacturer's epoxy swimming pool paint. This is a costly undertaking and would **cause undue hardship** to many municipal and commercial pool budgets.
- ◆ **SAUSEA R & D Scheduled Plan for Compliance** not later than 12/07 is attached and in action. We have already invested much time and money in this project and we do not intend to fail in the development of these new VOC compliant (340 g/l) swimming pool paint products - if we can have more time.
- ◆ **Please refer to our cover letter**, attached, for more specific details on our above request for limited variance.



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May 26, 2004

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Mr. Terry Black, Chief of Regulations
Pennsylvania Department of the Environment
Division of Air Quality Management
PO Box 8468, 400 Market Street
Harrisburg, Pennsylvania 17105-8468

Re: Ozone Transport Commission/ VOC Regs - AIM Rule
Cover Letter for Application for Variance under § 130.606

Dear Mr. Black:

Confirming our telephone conversation on subject topic with Susan Hoyle earlier this week, it is our understanding that Pennsylvania will be implementing the new OTC/VOC regulations on swimming pool paints and swimming pool maintenance coatings on January 1, 2005. We would like to make application for a Variance (extension) to these regulations (similar to that which New York State is allowing), for our following products:

SAU-SEA ENAMEL TYPE R - Chlorinated Rubber Base Swimming Pool Paint
SAU-SEA ENAMEL TYPE PV - Polyvinyl Base Swimming Pool Paint
SAU-SEA ENAMEL TYPE E - Epoxy Base Swimming Pool Paint
SAU-SEA PLASTER SEALER - Specialized Rubber Coating for Plaster Pools
POOL-SEAL RUBBER BASE POOL PAINT - Commercial Grade Rubber Pool Paint

Please see "Application for Pennsylvania Variance" summary attached. In addition, please take into consideration the following:

We are a small, family-owned New Jersey paint manufacturing company (producing less than 25,000 gallons of paint product annually). The above products represent the bulk of our production and we have been manufacturing these specialty "niche" coatings for over 30 years. The above legislation would, for all practical purposes, "put us out of business". Our reputation for top-quality pool paints and knowledgeable service has been our hallmark in the swimming pool industry - and has kept us successfully competing against much larger national paint companies for these many years.

We reformulated the above swimming pool coatings, in the past, to meet the government regulations for 600 grams/litre of volatiles - and we actually surpassed those guidelines and got our volatile content down to 540 g/l on all above products.

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Currently, we are in the early stages of the process to reformulate our swimming pool coatings down to the proposed guidelines of 340 g/l. Our rubber based and vinyl based paints are lacquer-type coatings. The resins require a specific viscosity and solvent evaporation rate to achieve liquid state and to remain in that state during application in outdoor weather (i.e., low to high temperatures, low to high humidity, low to high air movement, etc.) in the Northeast region that we serve.

Several years ago, after lengthy lab, field and storage testing, we successfully formulated and began production of a 2-part epoxy pool paint (again under the 600 g/l requirement). Now we are in the process of reformulating this coating again to meet the new anticipated VOC levels.

While some in the paints industry think that epoxies are the solution to a low-volatile paint for swimming pools because they can be formulated to meet the new, lower VOC levels, this is not a true picture.

Epoxies face inherent obstacles to successful swimming pool application that one does not find in other industry epoxy applications - e.g., untrained applicators (most help in this seasonal business is highly transient), and unfavorable application conditions (again, painting outdoors in heat, cold, humidity, sunlight, etc), to name a few. Most importantly, this is a resin that does not tolerate sunlight well; indeed the epoxy resin breaks down in sunlight and "erodes" (also known as chalking). This chalk can become so severe as to cause pool closures due to cloudy water. Some swimming pool epoxies can chalk so badly that they actually rub-off on bather's swimsuits and can even be tracked out of the pool on bathers' feet! Why would one recommend an epoxy for an outdoor swimming pool exposed to year-round sunlight?

Further, this undeniable fact that epoxies are "erosion" coatings must give environmentalists pause to question: "What becomes of the millions of pounds of bisphenyl resin (a primary and integral component of epoxy paint) that is released, as a powder, into our air and waterways annually?" Is there any connection between epoxy coatings and PCB (polychlorinated bisphenyl) contamination?

So, while we do manufacture an epoxy pool paint (for fiberglass pools or for recoating an epoxy painted pool), it is not our resin of choice as best for protection of the bare masonry swimming pool. Premium chlorinated rubber base paints far outdo epoxies by their ease of application, handling and storage. Further, their fusion-bonding between coats is unsurpassed for durability in a continuously submerged environment and also, because they redissolve during recoating, they incorporates a fail-safe feature that solves most blistering problems without the need for sandblasting (a common solution to most pool paint failures).

Special Note: When sandblasting is required, blasting an epoxy is easily 2-3 times more difficult, more costly and more waste-productive than blasting a rubber base pool paint.

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swimming pool products, inc.

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Further, a top-quality (properly pigmented) chlorinated rubber pool paint offers a very UV stable resin with maximum water and chemical resistance in a very thin film - normally 1 mil per coat. They can easily be recoated for many (20+) years without the need for sandblasting due to excessive film build.

Secondly, their fusion bonding eliminates the need for sanding between coats - another important advantage over epoxies which **do** require thorough (air-contaminant) sanding between every recoat to remove the chalking epoxy residue and to enhance their mechanical bond. Note: A "mechanical" bond between paint films relies solely on the ability of the fresh paint to "grab-onto" the scarified or "scratched-up" surface of the old paint, thereby, forming multiple layers of paint under submersion in a swimming pool. In "fusion" bonding, the fresh paint literally "melts into" the older layer of paint allowing for a single "fused" layer of paint on the swimming pool. The prolonged submersion of a painting system in swimming pool service allows the water to "penetrate" the paint system and, obviously, a system that incorporates multiple laminate layers (epoxies) over the years rather than a single fused layer (such as premium rubber coatings) will have a predisposition to bonding failure between coats, resulting in widespread peeling, lifting and, consequently, the need for sandblasting.

In summary, although epoxy formulations are superior for many interior applications (e.g., food processing plants, schools, factories, pipe lines, etc.) by virtue of their hardness and gloss (which remains unaffected indoors) and, while epoxies are used on many exterior applications already (e.g., pipe lines, water towers, industrial sites, etc) in spite of their "chalking" nature (the erosion of the coating going undetected, as it is washed away by wind and rain), we hope we have adequately illustrated the many serious disadvantages of using epoxy paints in swimming pools, both for the pool owner and for the environment, we believe, as well.

We are currently working to reformulate our rubber and vinyl coatings to reach the newer OTC regulations for swimming pool paint. Please refer to our R & D Schedule for these coatings, attached. To date we have not been able to achieve satisfactory laboratory formulations for field testing. When we do, however, we cannot market these "new" formulations without extensive and lengthy field-testing. Over a period of three years, we will have been able to thoroughly field test these coatings and bring them to market. As a small manufacturer, we cannot risk putting out any new coating prematurely and get away with it (as have some larger national paint companies in the past - please refer to article enclosed "A Coatings Day in Court").

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Again, as a small paint manufacturer (producing only approximately 20,000 gallons per year), we are restricted in our laboratory facilities and the necessity for outsourcing much of the required R&D to other laboratories is both expensive and time consuming. **With this in mind, we would request a "limited exemption" from the OTC regulations to be implemented in Pennsylvania**, much the same as New York is allowing to their small manufacturers in their 6NYCRR Part 205 as follows:

For "...small AIM coating manufacturers (producing less than 3,000,000 gallons per year) that may be impacted by the VOC content limits in Part 205. Part 205 will include a limited exemption (coating specific) for those small AIM coatings manufacturers who can demonstrate their inability to meet the VOC content limits based on economic and/or technical feasibility. The limited exemption, if granted, may remain in effect until December 31, 2007 with the opportunity for a one-time three year extension to the exemption, if needed.

"Small manufacturers do not possess large research and development staffs to reformulate or develop new compliant products and, therefore, could be put at a competitive disadvantage with large manufacturers. This limited exemption will provide small manufacturers with additional time to acquire the technology for producing compliant coatings without sacrificing the potential emission reductions to be gained by the regulation."

In your consideration of this request for variance, please also take into account that the bulk of our paints are manufactured and shipped in January through April. At least 50% of the coatings sold are applied on or before May 15, as most, if not all, commercial, club, municipal and military pools must be opened for Memorial Day. Considering that it normally takes at least a week for these large pools to be filled and chemically treated and balanced before opening, they must be painted and dry at least a week before filling and chemical treatment is begun. Therefore, the bulk of solvent emissions by commercial swimming pool paints is predictably **outside the ozone season of 5/15-9/15, as defined by government sources.**

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In summary, we are working as quickly as possible to develop our new swimming pool coatings within the proposed range of 340 g/l. However, we do need more time to reach this goal. Many large paint companies will not bother to devote the time and monies necessary to find a solution to this VOC issue with swimming pool paints. Historically, however, small companies have been known to be more innovative and resourceful. As a small New Jersey manufacturer, we are committed to developing new (rubber/vinyl) pool coatings that will succeed under the impending guidelines. "Necessity is the mother of invention" and we will prevail because the success of these coatings represents our very livelihood. We just need the time and we would sincerely appreciate your leniency in this matter.

In the meantime, we thank you for your consideration and we look forward to your advice.

Very truly yours,

Sau-Sea Swimming Pool Products, Inc.



Edward T. Hunter, Chief Chemist

cc: file-VOC Reg/Md

encl. R&D Schedule

A coating's day in court

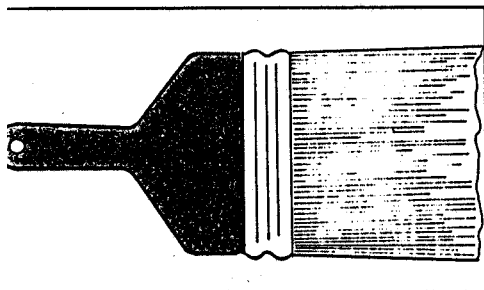
By Rich Smith

Pool painters who've tried them tend to view the new water-based epoxy coatings in one of two ways: They either like them or hate them.

Some users of the novel coatings — and there aren't many of them at this early stage of product availability — report that the coatings are terrific, easy to use and great looking. But others say they have performed dismally, leaving servicepeople in truly hot water with customers.

Water-based epoxy paints began showing up on store shelves about a year ago, although the technology to produce the coatings has been commercially available for more than five years.

The paints differ from traditional epoxy paint in that they employ little or no solvent to keep the material in a liquefied state until applied. Largely because of that distinction, "Before long, every pool paint will be water-based; it's the future," says Peter Haverlation, a San Fernando Valley, Calif., pool service professional who conducts paint seminars at the annual



Western Pool & Spa Show.

"Solvents contain smog-producing particulates, which the federal Environmental Protection Agency has been pushing paint manufacturers to get rid of," says Thor Nelson, president of Nelson Technical Coatings Inc., the South El Monte, Calif.-based maker

The jury is still out on the water-based epoxy paints

of Nelsonite Pool and Deck Coatings.

The absence of solvents and the resulting particulates also makes the new paints safer to work with. "Solvent fumes from the old epoxy paints were hard to take after a while," says Gene Olson, vice president of Great Lakes Biochemical Company Inc. in Milwaukee. "They're heavier than air, which means when you're working in the pool, the fumes stay trapped in there with you. A lot of guys complain about headaches and nosebleeds."

"There are no fumes with water-based epoxy," Nelson says. "I had one customer who was going to give up a very lucrative pool-painting sideline because he was developing an allergic sensitivity to the fumes. He was ecstatic when the water-based product came out. In fact, we're about to run an ad campaign with the theme that pool painting no longer need be a headache."

Easy application

Water-based epoxy paints are praised even by detractors for eliminating the literal and figurative headaches stemming from the hassle of applying the old-style coatings.

"I thought it was just miraculous the way the paint went on," says pool service professional Herb Rice of Hialeah, Fla. The paint can be applied by brush, roller or spray and is similar to household wall paint in its consistency and spreadability. Conventional

epoxy, on the other hand, is characterized by a glue-like composition that makes it difficult to roll and impossible to spray.

The new paint also affords less hectic application: Conventional epoxy paint consists of two parts — a resin and a catalyst to harden the resin. The catalyst cannot be added to the resin until the last moments before the painter is ready to put brush to pool wall. And, even then, the catalyst — which won't function well at outdoor temperatures below 70 degrees — must be allowed to stand 20 minutes with the resin before the paint can be used. Moreover, the painter must hurriedly apply the mixture. After 45 minutes or so, forget it; the paint turns rock hard inside the can.

But with water-based epoxy, there is no waiting to begin painting after the catalyst is stirred in. And the paint doesn't become unusable for approximately two hours after that. (An even newer version of the water-based epoxy requires no mixing of catalyst and will stay good in an opened can for most of the day or longer.)

Dampness no drawback

What some users find most exciting, however, is the fact that water-based epoxies can be applied to damp surfaces. "Traditionally, no matter what kind of paint you were using — epoxy or the more popular chlorinated rubber — the pool surfaces had to be absolutely dry or else you'd get blistering," Nelson says. "That was difficult to achieve in some parts of the country, like Florida and the Ohio Valley where you have high humidity and almost daily rains during the summer."

Nelson explains that when solvents combine with moisture they form a gas that pushes the dry film of paint up and away from the pool surface. But

that can't happen because of the lack of solvent in water-based epoxy, he says.

"This paint actually prefers a damp surface," states Neil Clarke of Laporte Industries Ltd. in Great Britain. As a result, users are able to drain a pool, paint it the next day, apply a second coat 24 hours later, and refill it with water a day after that.

"That's an important consideration in places with a high ground-water table," says Olson of Great Lakes Biochemical, a division of Laporte. "Before, if you had to drain a pool and keep it empty for a couple of weeks while you waited for the right weather conditions, there was the danger that the pool would pop" because of hydrostatic pressure.

The new paints also have the advantage of easy cleanup. Paint can be removed from brushes, rollers, sprayers, clothes and decking simply by hosing them off with tap water. With conventional epoxy paint, however, tools had to be discarded — on an hourly basis.

The easy application and simple cleanup make the water-based paints more profitable for servicepeople, too. A gallon sells for about \$30 (the average-size residential pool should take less than 10 cans to complete), and a service technician's fee of \$1,000 is considered a fair price, say experienced pool painters.

"It's a cost-effective option for customers who can't afford a replastering job, which runs about \$3,000 and usually has to be sub-contracted out by the serviceman," Haverlation says.

How tough is it?

Water-based epoxy paint is said to produce a tile-like surface, impervious to stains and abrasion. Calcium also has a hard time building up on it.

But the product may have drawbacks, too. According to critics, water-based epoxy paints are inclined to peeling, chalking and discoloration

even when the manufacturers' preparation and application instructions are followed to the letter.

Rice, the Florida service tech, says that of the 40 pools he has painted with the new coating material, 35 have been ruined. "The problems started about two or three months after the pools were refilled," Rice says. "In some cases, there was a lot of peeling. In others, the water turned milky white. And the rest of them were combinations of peeling and chalking."

At first, Rice thought the trouble may have been related to the local tropical weather. Now he's not so sure, after hearing from service techs with identical complaints in other parts of the country. "Apparently, it's a problem in the formulation," he says, declining to name the manufacturer.

Manufacturers — and there currently are fewer than five that make water-based epoxy paint — all attest to the quality of their own product but concede that there are some bugs still to be worked out on the generic level.

Clearing the waters

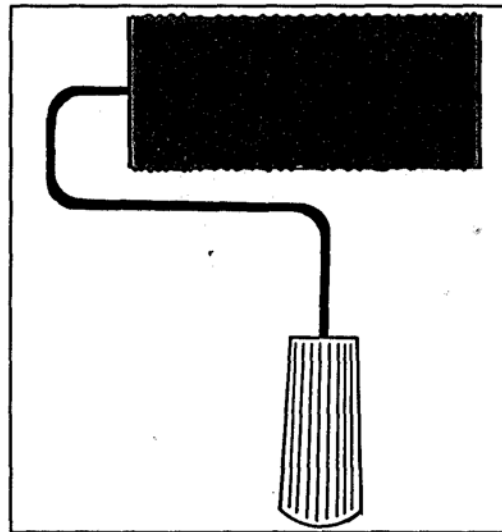
"All epoxy paints, no matter whether you're talking about solvent- or water-based, have a problem with chalking," says Olson, who adds that he has received no reports of problems from customers in the year or so since Great Lakes introduced its water-based epoxy paint to the market.

Normal chalking, experts say, is the result of ultraviolet radiation from sunlight striking the painted surfaces of the empty pool. The photochemical reaction ceases once the pool is refilled with water; turbidity should only last a few days.

But Rice and others say the chalking problems they encountered developed long after the pools were refilled and that the problems did not abate with time.

"The chalking started after about three months and was in such extremes that at one home the filter wouldn't clean up the water no matter what we

did," Rice says. "And these were pools with properly maintained chemistries." Rice adds that several of the paint jobs



turned color — from white to blue.

"Epoxyes traditionally have a very poor record for color retention, I don't care who made it or when," says Howard Stevens, marketing services manager of American Chemical Corp., an East Lakes, Ohio, firm that produces epoxy coatings — none of them water-based.

The discoloration is blamed, again, on ultraviolet radiation. Olson, however, says he hasn't experienced any color problems with his new epoxy paint products, not even on pools in the sunny Phoenix area. In addition, manufacturers say, ultraviolet stabilizers are now added to the water-based epoxy paint formulations to combat discoloration.

Faulty adhesion?

Still, the shortcoming of greatest concern to pool painters is faulty adhesion.

Nelson recalls a user in the Southeast last year who painted several pools with water-based epoxy and was horrified to discover sheets of paint up to 3 feet long bobbing in the water at each home some weeks later. Nelson, however, insists that the paint was properly formulated

(Continued on page 52)

EPOXY

Continued from page 49

and that it peeled as a result of improper application by the user.

"He sent us samples of the sheets and we analyzed them in the lab," Nelson says. "We found nothing wrong with the paint itself, but the user admitted to us that he had put it on twice as thick as the label recommended. Apparently, he wanted to make sure that each paint job would last a good long time.

"But because of the high water table in the area and his fear of popping the pools, the user also cut in half the recommended time between coats. He did the same with the time between the last coat and the refilling. We strongly suspect that that's the reason the paint jobs failed so badly: He simply didn't follow the directions."

A crisis of confidence

Regardless of who or what was at fault, horror stories such as these leave many potential users of water-based epoxies cold. "I've heard enough tales of this kind to discourage me," says Wayne Hansen, a service technician in San Diego.

"I don't want the liability for paint that goes bad," says Russ Hargrove of Guardian Pool Repair, also in San Diego. "The manufacturer isn't going to assume the liability. All they'll do is send me some new cans of paint. Who needs that? What I'd want is for the manufacturer to come in and re-do the job. If I have to re-do it myself, I've lost any profit I might have made the first time. In fact, it would probably wind up forcing me to spend my own money to make things right. It just isn't worth the hassle. The attitude of the manufacturers is that it's always your fault even if you followed their directions and prepped the pool exactly the way they say to."

Rice disagrees. He says the manufacturer of the paint he used has bent over backward to ameliorate the situation. "In no way has the manufacturer run away from his obligation," Rice says. "They've reimbursed me for my labor and given me free materials to re-do the affected pools."

Rice says the manufacturer also has sent representatives to inspect each pool in an attempt to puzzle out the reason behind the failures. The manufacturer also has since reformulated the paint. Rice has used the modified product on

(Continued on page 54)

EPOXY

Continued from page 52

only one pool since then and says he wants to see how well it holds up before applying it to any more pools.

"It's still too soon to tell whether it's going to work," he says. "I'm going to be a lot more cautious this time. But, now, of course, I've got customers who don't want to hear another thing about paint."

Backing the product

Nelson, who says his product isn't the one used by Rice, believes that manufacturers have a responsibility to support their customers when things go wrong. "When someone has a problem, we want them to call," he says. "That's why we've got a toll-free number and do on-site inspections. I think this paint is reliable — as long as you buy from a manufacturer that is itself reliable.

"I think it's safe to say that we (as an industry) are being fairly audacious to have brought this product out (without full testing). We don't know yet whether the product will work in the hands of relatively inexperienced users. We just don't know because the product is so relatively new."

Nelson says early negative word-of-mouth about water-based epoxy paint could hamper the ability of any subsequently improved product to attract a following.

"These things hurt us as an industry," he says. "It's just like having a pool builder in the area who starts a bunch of jobs and then skips town with the up-front money. It gives the entire industry a black eye.

"About once every five years, something 'new' comes out in the pool paint industry. Typically, it has turned out to be a disaster. But that isn't the case with these new water-based epoxies. I think, once people try them and see how well they work, that they will become my hottest seller.

"The reason is the ease of application. For servicepeople, that's the name of the game," Nelson says.

Still, not everyone is sold on the notion that the new epoxy paints are all that much easier to work with. "You still have to carefully prep the pool surfaces," Hargrove says. "That means an acid etch, TSP treatment, thorough rinsing and possibly even sandblasting. That's a lot of effort. And, when you're dealing with epoxy paint, you've got to be even more thorough in prepping than you do for other types of coating." ■

SAU/SEA

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SAU-SEA R & D Plan for Compliance with Pennsylvania §130.603:

New SAUSEA Enamel R -VOC/OTC 340 g/l Rubber Base Swimming Pool Paint
New SAUSEA Plaster Sealer -VOC/OTC 340 g/l Rubberized Swimming Pool Paint
New SAUSEA Enamel PV - VOC/OTC 340 g/l Vinyl Base Swimming Pool Paint
New SAUSEA Enamel E - VOC/OTC 340 g/l Epoxy Base Swimming Pool Paint

- 1) Primary (Current) Phase:** Research and selection of the following paint components in order to find those that would offer the lowest VOC levels and at the same time not sacrifice their intended purpose in a swimming pool paint coating. The components to be researched (singularly and combined) are: resins, pigments, plasticizers, solvents, diluents, thixotropic and other additives, pigment extenders, surfactants - all of numerous grades, types, viscosities, etc. We are currently in this phase and, as you can imagine, the various combinations are enormous. Further, this research involves lengthy consultation with many suppliers and also outside lab work (because of our limited lab facilities) - forcing us to rely on their lab timetables/schedules, all time-consuming as well. **Estimated date of completion: Not later than 12/05.**
- 2) Second Phase :** After development of satisfactory laboratory formulations for the above coatings, we require a 3-6 month time frame for the in-house (factory production) of the newly formulated voc-compliant coatings. During this time, we determine the feasibility and costs factors of mass production. This phase also addresses any production "glitches" we encounter and may result in some laboratory re-formulating, as well. Successful formulations are then "shelved" to determine long-term storage effects (i.e., in-can corrosion, coating stability, settling, etc.). Simultaneously, the coating formulations are processed to the next phase. **Estimated date of completion: Not later than 6/06 for production adjustments and 12/07 for storage stability tests.**
- 3) Third Phase:** After the coating(s) have passed in-plant reformulation successfully, they are moved to field-testing. The coating formulations are put "in-service" on "test" swimming pools and monitored, over a two year period for performance under submersion in the chemically treated pool environment. Meanwhile, some portion of the test coating(s) on each pool are monitored to determine the actual service life, before recoating is necessary, while other portions of the test coating(s) are recoated after 1 year and then observed for intercoat adhesion (critical in the success of a submerged swimming pool paint) over a period of several years and/or recoats. **Estimated date of Compliance: Not later than 12/31/07.**

Normally, the successful development of a new swimming coating takes approximately 3 years, moving through the phases outlined above. We are confident of our results to date and believe that we will be able to market our new compliant formulations within the next 24-36 months.