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and Toxic Substances  
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# **Pesticides and New Audio Technology**

## **Summary Report**



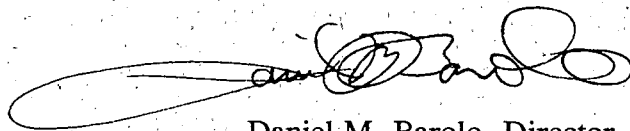
## Acknowledgments

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OPP would also like to extend a special thanks to the other guest speakers who offered their special insights on pesticide risk-reduction initiatives, potential audio applications and how their implementation would be impacted by the Federal Insecticide, Fungicide and Rodenticide Act. They are Rob Denny of the Agricultural Container Research Council, Mary Ellen Setting representing the Association of American Pesticide Control Officials, Jesse Baskerville and Phyllis Flaherty of EPA's Office of Enforcement and Compliance Assurance, and Steve Morrill of EPA's Consumer Labeling Initiative.

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Lastly, the Office of Pesticide Programs of EPA is indebted to the many participants listed on the next pages who provided their ideas, insights, suggestions and issues about this new audio technology and its potential usefulness and practicality in reducing pesticide misuse.



Daniel M. Barolo, Director  
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*Report prepared by Laura Dye, Amy Breedlove, and Donna Price.*





## Introduction

Pesticides are an important industry in the United States and abroad, with pesticide sales and usage, each year, in the billions of dollars and millions of pounds. The key factor in most cases of reported human injury or environmental damage incidents involving pesticides is misuse. A major focus of EPA's Office of Pesticide Programs (OPP) is reducing the risks associated with pesticide use.

Recently, new technology has emerged that could allow recorded, audio messages to be activated to reinforce directions for safe and proper use, storage and disposal of pesticides and pesticide-related products. On December 17, 1996, OPP hosted an open meeting to solicit the public's thoughts about this new technology and its potential usefulness and practicality in reducing misuse.

At the meeting, participants were introduced to new micro-computer chip, battery and product housing technologies. EPA staff provided additional background on the audio message concept and discussed how it may relate to other efforts to improve product labeling. EPA's Office of Enforcement and Compliance Assurance provided preliminary perspectives on the use of audio message technology with pesticides. In addition, a representative of the Association of American Pesticide Control Officials provided state perspectives. The Agricultural Container Research Council presented current programs in agricultural container recycling and how new audio message technology may "fit in" with present programs.

EPA had three primary meeting objectives. The first was to provide an occasion for an initial airing of ideas, issues and/or concerns about the use of this technology with pesticides and pesticide-related products. The second objective was to discuss regulatory policy, compliance and enforcement issues associated with the possible use of the technology. Third, the meeting was an opportunity to foster partnerships among EPA, State Lead Agencies and other potential stakeholders. This report represents the summary minutes of the December 17, 1996 open meeting.



## Opening Remarks

*by Daniel M. Barolo*  
*Director, Office of Pesticide Programs*

I appreciate this opportunity, and welcome you to this exchange of information, ideas and issues because I am personally excited about this new technology. It brings great opportunities to the Program in many, many ways.

We need *your* help, stakeholders and interested parties. We are interested in getting your ideas, thoughts and recommendations on how we can advance this concept and actually put it into practice. To the extent that it can be piloted on certain issues within the Program, we look forward to the opportunity, but beyond that, we see it as a valuable and hopefully, in time, an invaluable communications tool.

Communication is at the top of everyone's list about problems with any institution, and the Office of Pesticide Programs has its fair share of issues. I think that labeling, as a part of our Program, has gotten a larger proportion of criticism. I don't know how many of you, like me, don't read the total label. Pesticide product labels are complex and convoluted, and often, they are too comprehensive for most of us at our advanced stages to understand. We think, I think, this audio technology provides many opportunities to educate how to properly use, store, and dispose of pesticides and pesticide-related products.

We have three broad objectives for this meeting today that I will relay, not in order of priority, but with some emphasis on a couple of aspects of each objective. First, we want to have a general discussion about the feasibility of the technology. Given your collective insight and understanding on what it is and what it may be, how effective can it be, how feasible is its actual application in the real world, and under what circumstances and conditions could it work? Second, we want to discuss regulatory policy, compliance and enforcement issues. As we are reminded that the *label is the law*, we need to be particularly careful when applying this technology. The audio message would be an adjunct to labeling initiatives--a supplement rather than a replacement for the written label. We also need to find the best way to implement the audio message rather than merely duplicating the written label or making the label more complicated or difficult. Our Program's third objective, and perhaps the most important and in accord with our principles of transparency and openness, is to build partnerships. The better our *customers/stakeholders* understand what the Office of Pesticide Programs is, the better that *you* can help us make it all it can be. We are looking forward to these discussions and interactions but, even more importantly, we are aspiring to foster partnerships with you over the long term. We need to walk the line between our being a regulatory agency and regulators, but at the same time, there is *plenty of room* for us to find ways and means to better work with stakeholders affected by regulations and what we do for a living.

Our current workload is overwhelming. The new law, the Food Quality Protection Act, is adding great complexities to our core program. It calls for constant innovation, re-invention, renovation and, frankly, revolution on how we conduct business in the Program. Otherwise, we will not be able to keep pace. We are getting some new resources; however, there will not be enough, never be enough, in today's market to do the total job available to us. So, we need to take advantage of new, emerging technologies, and this audio technology is a piece of it.

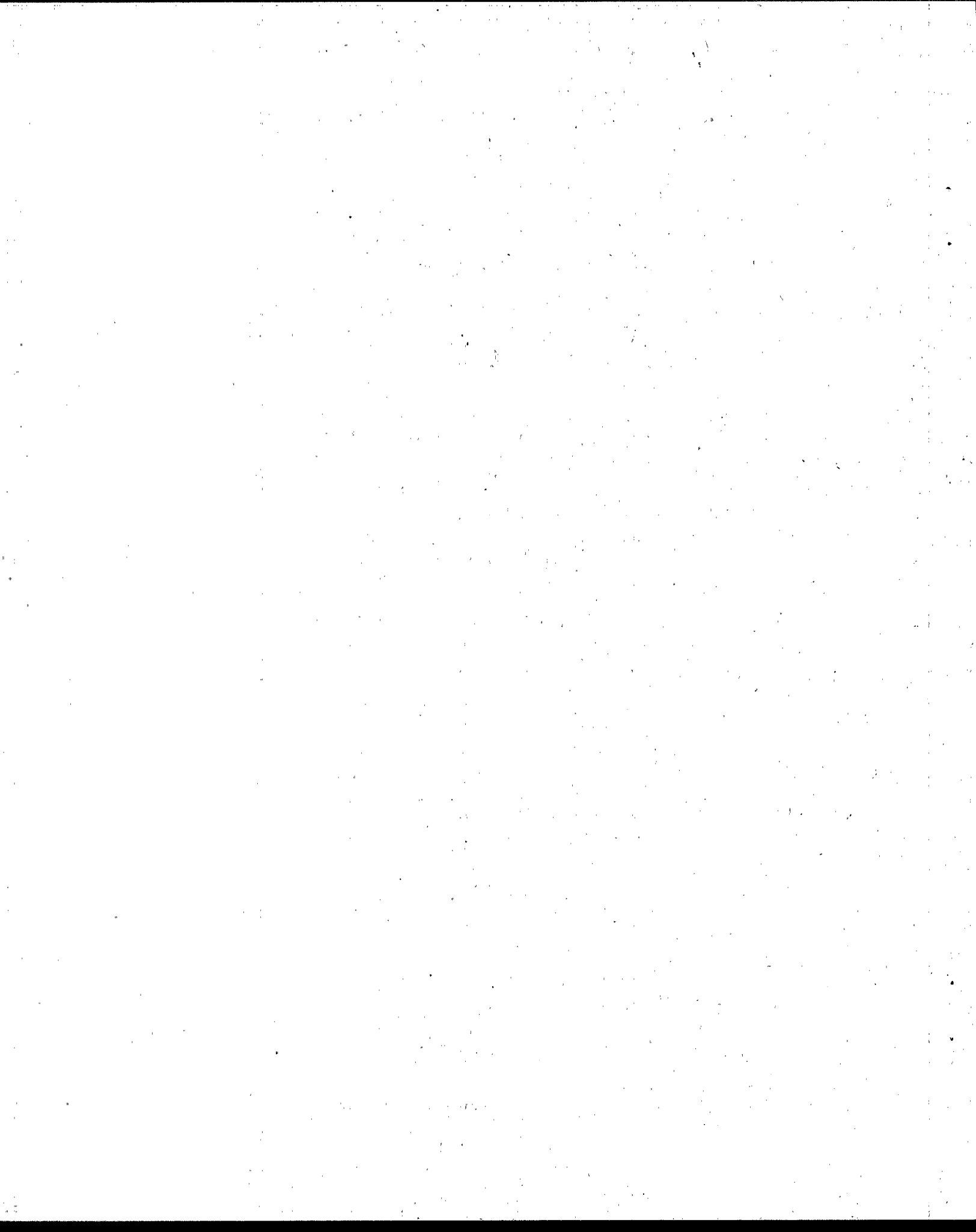
Use and misuse are sources of serious credibility problems and real life, health and eco-incidents. Many of you have been following the situation in Mississippi where a series of illegal uses of a pesticide product have resulted in, at latest count, \$50 million in Superfund costs. That is a tragedy not only for the American taxpayer but also for the homes and families affected by it. We need to find ways to communicate messages in clear language so that, in turn, people will use pesticides as they are intended to be used with all the care, conditions and restrictions that are appropriate.

Risk reduction is part science, part regulation and part communication. Although science is the foundation for what is on the label and we have regulatory and compliance responsibilities, the fact is that communication is a critical ingredient in being able to educate all segments of the United States about pesticides, their uses and their restrictions. Using audio messages is an opportunity for us to do it.

I give a lot of credit to the staff of the Pesticide Program who have taken the initiative to work with industry representatives and others to get this concept off the ground. It is very difficult in government to get any new idea and advance it an inch-and-a-half, let alone actually put it into place. I challenge both our staff to continue not to worry about the cynics out there who say that it can't be done but to look at this as an opportunity to take this as far as it can be taken and still make it a meaningful new innovation for the Pesticide Program. Not only am I willing to support it verbally but also the Program has a resource base to fund some high-level initiatives in this area, if we are convinced it is the right thing to do.

My last remark is general good advice: do not get lost in the morass of details. We tend to take an idea, a concept, a regulation and a policy and spend forever refining it and not looking at the opportunity that most new initiatives provide. I would much rather see us continually move forward exploring the unknown as we take a fork in the road. I encourage all of you surrounding this technology, to participate in some pilots, test some ideas and learn from the mistakes and build on the experiences rather than believing we need to refine it or resolve all the potential problems associated with a bright idea. As you are talking this through, I encourage you to not to get caught up in 4,000 reasons why it can't be done, but to look for ways and means to test it, and to find niches for this type of technology in today's and tomorrow's marketplace.

I appreciate the opportunity to kick this off and hope this day is both productive and worthwhile for all of us. I hope you can look back and say that this was the start of a very valuable contribution to public education on pesticides and risk management in 1996. Thanks very much.



## New Product Housing and Audio Recording Technologies

by Ben Everidge

CEO, Everidge Group and SpaceMark International Corporation

Good Morning. On behalf of SpaceMark, let me thank EPA for giving us the opportunity to talk to you about our technology. We also wish to thank EPA for the leadership that they have been providing during concept development. We have a project that started off as a trading card and has now ended up as *talking label technology* for the pesticide industry. We always knew that the chip-corder features would work very uniquely, and we're glad that we can, at least, present it to you as an option.

I have been asked to come and talk to you about our company, the services we provide and our products. Then later this afternoon, I will have the opportunity to talk with you, one-on-one, about your services, products and needs.

### SpaceMark Corporate Background

SpaceMark is a corporation that we formed on July 20, 1994, on the 25th Anniversary of the Apollo 11 moonwalk. We use a lot of the technology that was developed by NASA and the Space Program. We are a Florida-based, for-profit corporation. We are ruled by a nine-member Board of Directors, who serve three terms. We give 10 percent of our net revenues to charities, and we are educationally focused, using Space as a motivator.

Our mission, basically, is to develop and market unique trading cards, both sports and nonsports. For those of you who are not enthusiasts, trading cards are currently a \$2 billion-per-year industry. In fact, one of the jokes constantly told in the Wall Street Journal is that "many kids collections of trading cards outpace their parents portfolios from Wall Street." So, it has been a very lucrative market.

### SpaceMark Products and Services

Our products are micro-chip, CD audio and CD video trading cards. We also have an interactive CD-ROM, and like other CD's, it will manipulate data, video and audio clips. They can be used for *talking technology*, which is the focus of this pesticide project, as well as for teaching and video guides, games and entertainment.

In terms of our services, we have a speakers' bureau that utilizes 32 former astronauts mostly from the Mercury, Gemini, Apollo and Shuttle Space Programs. We do a lot of our own design, mastering, replication, planning, packaging and distribution. One of our first projects is

a set of four trading cards containing micro-chips and featuring four of the original seven Mercury astronauts.

We also have a new CD-ROM trading card that will be released in January of 1997. Basically, we have taken computer disks (CD's) and custom molded them on the back of a trading card. Currently, we can put up to 12 minutes of full-color video on the back of a trading card, and in the near future, as impression rates improve, we'll be able to put even more. On our CD-ROM audio cards, we can put up to 5 minutes of full-stereo, and on our CD interactive cards from 80 to 300 megabytes of data.

Regarding product features, the micro-chip trading card is *itself* a player whereas the CD-ROM card requires a computer with a CD-ROM drive to play it. We have the ability to put from 10 second to 4 minute micro-chips into the player. Obviously, the longer the playing time, the more expensive the chip and the product will be. Currently, the 20-second chip is our preference because it is easily available and affordable. In addition, we have found the longer the message, the more difficult it is to maintain the attention of the listening audience, and 20 seconds, the typical length of a television commercial, affords the best audience attention.

Our SpaceMark team consists of Information Storage Devices of San Jose, California, that manufacture the micro-chips, and Energizer Power Systems of Westlake, Ohio, that provide our battery service. We manufacture micro-chip cards in a variety of different ways. It takes us about 6 to 8 weeks to fill an order from the time we receive it. When we get an order, we call ISD, who sends the number of micro-chips needed to our foundry in Hong Kong, China. Our foundry will put all the components together and master the chip by putting on the message. The whole unit comes back to us ready to assemble and package. Our Florida printer prepares the final package with graphics, and it's ready to send on to the client. We sell two sizes of trading cards, the standard which is 2.5 by 3.5 inches, and the long card, 2.5 by 4.5 inches.

Regarding chip technology, more power exists in a single chip than what was available in the entire United States in 1958. The 20-second chip is supported by five patents on design. It features a 100-year message retention time; it's very durable. It has a manual switch, a micro-processor controllable circuit board, a zero-power message storage unit and an automatic power-down feature that allows us to save on battery strength when not in use. It has an on-the-chip clock source and an automatic game control. We have the ability to reprogram this chip without tearing the unit apart. The card is made from injectionable, plastic solid-state surface housing; so it is solid plastic all the way around the unit. It is powered by two 3-volt M-battery button cells. It has a 16-ohm speaker. We have an accessible battery tray that actually opens from the side to allow replacement of the battery. We have a seven-step quality control inspection process, which means this unit works and it's guaranteed by us, the manufacturer. We pay all the customs, duties, tariffs and other fees.



The whole objective of the *talking label technology* was to cost-effectively assist the pesticide industry in terms of improving consumer compliance and reducing industry liability. Some consumers may not understand and/or can't or don't read pesticide labels. For SpaceMark, ISD, Energizer and especially for EPA, we wanted to find a way to recycle it. This product could be out in the public in a vast number of units, and we wanted to have it used and reused rather than simply disposing of it.

A number of issues were identified through the U.S. EPA, other federal agencies, the pesticide industry and SpaceMark. Among the issues and options are the following:

- (1) What are the options regarding the length of the message?

**Answer:** There are 10, 20, 45, and 60 second- and 2, 3 and 4 minute-chips.

- (2) What are the cost factors?

**Answer:** The primary cost factor is master recording expenses, going into a studio and recording the voice and any sound effects to the message. One of the reasons we chose the ISD chip is because it can be made analog, which means it's real voice as opposed to synthetic. ISD's chip has the ability to hold a voice message, sound effects and music simultaneously, and it has the reprogramming feature.

Another cost factor is additional molding expense each time the shape of the unit is changed. A one-time, master mold will cost anywhere from 10-to-15 thousand dollars, depending on the mold's complexity.

Chip availability is also a cost factor. A 20-second chip is very obtainable; however, the longer-playing chips are more difficult because companies like Motorola have purchased a large market-share for use in their cellular products.

Regarding cost-efficiency, if the pesticide industry came together and collectively orders, we can obviously bring the price down greatly. We can order in as little as 5,000 unit minimums, and we have an unlimited maximum order capacity. At 5,000 units, we have an \$ 8.00 per-unit price of up-front costs, and if we are dealing with 200-million units, the costs drops to \$ 1.25 per unit. By adding the reprogramming and recycling feature, the cost becomes 75 cents per unit, and when recycled a third time, the cost becomes 50 cents per unit.

- (3) How many uses can we get out of it by reprogramming the message on this chip?

**Answer:** The more we can reuse and reprogram, the more the per-unit cost of the chips will come down over time.

- (4) Do we need to do any printing when packaging, or do we send it as an unfinished unit off to you, the pesticide manufacturer, to encase in your product, or do we need to do any packaging assistance?

**Answer:** If we need to assist you with packaging, it will have an impact on costs.

- (5) Regarding speaker volume, the speaker has been kept relatively small to maintain a very thin trading card; this is a key feature in the trading card industry. In addition, we have muted the sound to allow the card to be a personal player so that it wouldn't annoy parents. But do we need to maintain these features or can we modify them for the talking label?

**Answer:** The plastic mold has a large cavity that can accommodate a larger, cheaper speaker to amplify the recorded message.

- (6) What are the self-life and temperature tolerances of this product?

**Answer:** The product is very durable, having been stored in very hot warehouse temperatures without loss of quality. Whereas the micro-chip message will last 100 years and will not erase if you drop the unit, the speaker *will* disintegrate over time. If stored in a wet place, the speaker may deteriorate over a 10-year period. It would not be as loud, but it would play. The battery and chip can last for a much longer period of time. A little later this morning, Energizer will be speaking about overall battery strength.

- (7) What measures can be taken to reduce the likelihood of a child swallowing the battery?

**Answer:** The tray that presently opens to give access to the battery can easily be secured with a screw during the manufacturing process so that a very young child would not be able to have access to the battery. With rounded edges and internal components not easily accessible, the product is very child friendly.

- (8) Is the product disposable?

**Answer:** The product does not take up much space; it is recyclable, reprogrammable, and reusable; as a result, there are all sorts of recycling approaches that can be developed with you.

- (9) Can the message be reprogrammed on site or does it have to be sent back to the factory?

**Answer:** It can be reprogrammed on site. One of the capabilities of ISD's chip is it allows us to put a very simple microphone into the product so that one can custom record on site. One can put on a new message, insert new batteries, and then recycle it back into use. It gives one the ability to record in any language.

- (10) What are the benefits of this technology in reducing pesticide liability?

**Answer:** Regarding a manufacturer doing all he/she can to ensure safe and proper use, the message can be in any language and affords those who may be visually handicapped the opportunity to hear the message as opposed to seeing it. There are many marketing and public relations opportunities such as sending this technology around to school systems in the United States to teach students about pesticides.

We made three samples which are on display in the back of the room: the first is a flat label over a container debossment in which the audio unit is stored in the debossed area and can be played by pressing an area identified on the label; the second unit rests on the container such that the plastic label appears slightly raised; and the third unit is embedded in the top of an aerosol can so that the message will play when the lid is removed, either once or many times. These features can be modified.

The next steps are gauging what the industry interest is in this project, raising any other issues that we haven't addressed, building in volumes so we can get cost efficiencies, and tailoring the project to a particular product or service you may have. There are a variety of ways to get in touch with us, both through the Internet and E-mail. We are located in Orlando, Florida. We, at SpaceMark, would be happy to hear from you and answer any additional questions you may have.

*Questions from the audience:*

1. Would you explain, a little further, what you mean by reprogramming?

**Answer:** The chip is secured in the card with resin so it does not pop out easily. The reprogramming feature allows us to go in through a little hole in the card, and using a probe bar, one can change out the message as long as the message is the same length or shorter than the one originally on the unit.

2. What would most likely happen if someone were to try and tamper with the message?

**Answer:** Because it does require a special probe bar, if someone were to tamper with it, the message would mostly likely erase. It is a very difficult process to tamper with the unit to the point the message would erase; however, if someone did manage to erase the message, we could take the card back and put our message on it as long as no physical damage had been done to the unit.

3. Do you have dated shelf-life data that indicates how well this technology will hold up?

**Answer:** The key issue for us is really the battery. As you know, heat and cold will wear the battery down. Energizer has charts indicating temperature tolerances that they

will show you. As for the product, the chip, solder, bonding and the plastic, extremes in heat and cold are not an issue.

4. What are the effects of dust or exposure to water sources?

**Answer:** The chip because it is encased in resin during the manufacturing process does not have an opportunity to be exposed to dust or water. Dust is not an issue because everything is covered or encased including the speaker holes, which are covered by the card. The speaker would dissolve before dust could do damage to it.

Our concern would be exposure to water, which would affect the battery and speaker. We have tested some units after submersing them in water, and they will play again after the battery is dried off, but the speaker will dissolve a little bit.

Because SpaceMark is located in Florida, we were concerned about humidity. The warehouses can become very hot, up to 140 degrees Fahrenheit, and very humid, but we've run some tests and have had no ill-effects due to high humidity and above-normal temperatures.

5. In terms of security, what features do you have to prevent unauthorized reprogramming of the message? Do you have a code on the chip that will prevent someone from reprogramming the message?

**Answer:** There is no code you could put on the chip to prevent someone from reprogramming the message if someone wanted to go to those extremes; however, the cardboard on the unit has to be pulled back to get to the probe hole, and you will notice the damage and realize someone has tampered with it. When sending the unit back to you, we would always finish the unit by putting, at least, a piece of blank cardboard over the components. Then all that would remain to be done is the final printing, and if you wish, we could do that too.

6. Outside of trading cards, how extensively is this technology used?

**Answer:** These chips are used by a number of companies, such as Motorola and Fisher Price. ISD will go into that in more detail during their presentation. There are a number of micro-chips on the market. We chose ISD because it had a durable chip with high-quality recording capability in real voice rather than synthetic.

7. How do you see recycling working with this technology?

**Answer:** This answer, for the most part, I'll defer to EPA, but one way it could work is that SpaceMark would be willing to transfer all the cost savings of this project to the pesticide industry with only a 10-percent mark-up for the handling, the research and development and so on, and then buy back the product in order to use it again in the trading card industry. It would be cheaper for us; we have the same costs you do.

## Multi-Level Storage, Reprogrammable Computer Chips

*by Gerry Youngman*

*Regional Sales Director, Information Storage Devices (ISD)*

Good Morning. Information Storage Devices or ISD designs, develops and markets semiconductor voice solutions for applications in the communications, consumer and industrial marketplace. ISD's corporate headquarters is located in San Jose, California. We have 150 employees and have revenues exceeding 54 million dollars. We were founded in 1987. From 1987-to-1991, ISD focused its energy in the development of our ChipCorder<sup>R</sup>, which is a *unique* use of existing electronic technology. What makes our device exceptional is that we have taken digital memory and found a way to put an analog signal within it. Our first production shipments were in 1992, and today, we use many of the major offshore foundries such as Samsung, Sanyo and Rohm, to produce our products. We feel that having multiple sources is a good business decision; if, for example, there was a major earthquake in California, we would still have manufacturing capability because our foundries are located offshore.

### Conventional Versus ChipCorder<sup>R</sup> Technology

Most digital solutions sound very robotic because of the compression of the digital memory. These systems start with an analog signal and require an analog-to-digital conversion, which changes the signal into a series of numbers. Conversion is done using a digital signal processor; however, due to the magnitude of numbers generated, a compression of the signal must occur. As the message is recorded via a microphone, the conversion and compression steps take place to allow storage in digital memory. When the stored message is played, a decompression and reversion to an analog signal must take place before the message can be heard.

ISD's voice solution is pure voice and requires no conversion or compression. In addition, the speaker and microphone plug directly into the device, making it a self-contained solution. Our devices store messages in the absence of power. Thus, the message will be preserved under normal environmental conditions (up to 85 degrees Celsius) for 100 years. (See diagrams on following pages.)

### How Do We Do It?

When the personal computer was first invented, a type of memory called the Programmable Read Only Memory (PROM, consisting of 1's and 0's) was created. As computers advanced, PROM was transformed into Erasable PROM or E-PROM; however, E-PROM was cumbersome because erasure required sending the memory back to the manufacturer. Today,

we use EE-PROM, Electrically Erasable Programmable Read Only Memory. Erasure of the memory can be done by the user on site.

What is interesting about EE-PROM is that it doesn't store the binary code (1's and 0's) all at once; it takes some time to build enough charge in the cell. ISD has taken EE-PROM a step further using multi-level storage methodology to create 256 levels per cell. By using precision circuitry, analog signals can be stored without conversion or compression on these levels. This process allows high-quality human voice recording in the 0-to-4,000 hertz bandwidth. Music can also be recorded but not at the same level of quality because its best recording bandwidth is 15,000 hertz. Because of multi-level storage, ISD is able to store data in one bit that a digital voice solution stores in eight bits or one byte. Because of the eight-fold increase in storage capacity, our analog voice solution requires less memory.

Another significant feature of the ISD chip is its higher sampling rate. Sampling is a way of digitizing a waveform at specific, measured increments. When a waveform is sampled, its digitized representation is like a stair step. The more pronounced the stair step the slower the sampling rate. The faster one samples, the more memory one uses. Typically, one wishes to sample at twice the rate of the top bandwidth one plans to use. For example, an eight-kilohertz sampling rate represents a 4-kilohertz bandwidth. The human ear can hear from 0-to-20,000 hertz. Sampling specifications are 300-to-3,000 hertz for telephones. The ISD voice solution is 0-to-3,300 or 4,000 hertz. That's why our voice solution sounds better than a telephone.

Our ChipCorder<sup>®</sup> also contains a sampling clock to control the sampling rate; an aliasing filter to smooth out the signal and eliminate distortions; and a memory array to provide multi-message storage capability. The ability to store and play multiple messages may be especially useful when implementing *talking label technology*.

We have a variety of products. Our 3,300 hertz solutions use a 3-volt technology, which ISD is just beginning to explore. We specify our products by the number of seconds they will play: 10, 20, 45, 60, 120, and 240. Our products in the highest demand are the 10- and 20-second devices, which are used in great volume.

### ChipCorder<sup>®</sup> Applications

The final manufactured product is simply a microphone or some sort of audio source, our ChipCorder<sup>®</sup>, a speaker and power. It is a self-contained solution and, there are many, many applications. For example, in the communications area, our devices are being used by every cellular telephone company in the world. In cellular telephones, the ChipCorder<sup>®</sup> is used as an answering machine, a voice memo, and an outgoing message. In the consumer market, our ChipCorders<sup>®</sup> are in language translators, interactive toys, pocket recorders, talking

cameras and teleflora products. In the industrial market, our devices can be found in ATMs, elevators, vending machines, hazard signs, warning devices and multi-lingual guide phones. ISD's voice solutions are available and distributed worldwide.

### What Does the Future Hold?

We are and will be shrinking our chip, increasing its storage density, reducing the voltage necessary to record and play, and increasing the play duration up-to-30 minutes. The end result will be an ongoing campaign to continually reduce the per-chip production and sales costs.

#### *Questions from the audience:*

- (1) Do you see a chip that provides a 10- to 20- second play, that does not have a reprogrammable feature? The problem is the cost of \$1.25 per unit, which is too high for our industry. Regarding home and garden products, this technology could be very useful to help the customer sort out the myriad of products at point of sale; the customer wants to be able to make a 10 second decision on which product is the most appropriate to buy; however, a \$ 1.25 per-unit cost eliminates profitability.
- (2) If a chip could be made without all these enhancements, could the per-unit costs be reduced to less than 50 cents?
- (3) And, when would it be available?

**Answer, ISD:** Yes, such a chip that did not require reprogramming capability could be made and would be significantly less expensive. Such a product could be available by June of 1997.

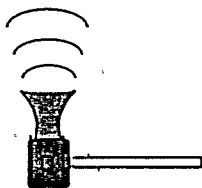
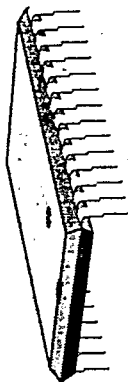
**Answer, SpaceMark:** Yes, such a chip would be available in 6 months, but your volumes in the marketplace must be high to reduce the per-unit costs to less than 50 cents. If companies individually didn't have the volume but if the pesticide industry, as a whole, would be willing to implement the technology, then the per-unit costs could be significantly reduced to less than 50 cents. However, volumes would need to be high to reduce costs. In addition, one can buy in the marketplace less expensive chips than these, but one must remember that for most chips, if the battery goes, the message is erased. Because of the liability issue, one would want a chip that is reliable, that would guarantee that the message is playable whenever the consumer hits the play button.

# ChipCorder™ TECHNOLOGY



Microphone

ChipCorder™



Speaker



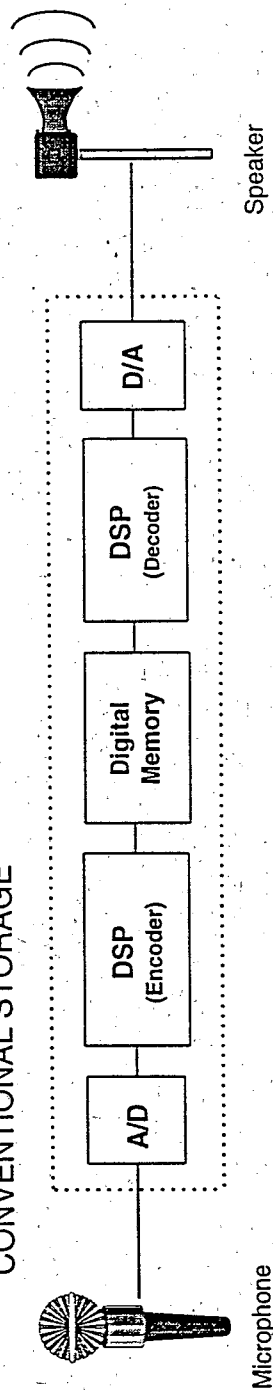
Batteries



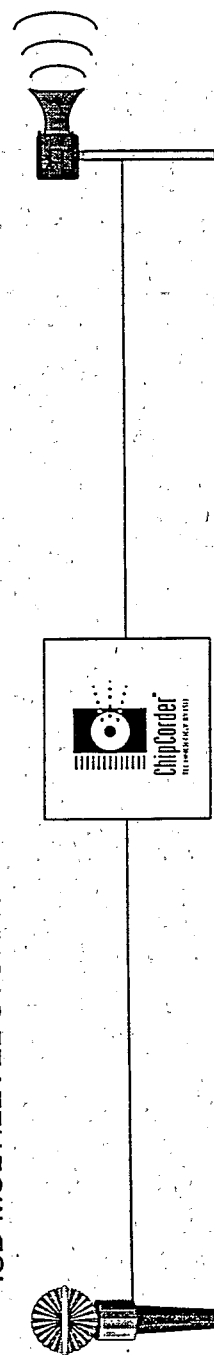


# ChinCorder<sup>™</sup> VERSUS CONVENTIONAL STORAGE

CONVENTIONAL STORAGE



ISD MULTILEVEL STORAGE





## New Battery Technology

*by Terry Telzrow  
Manager of Standards, Product Safety  
and Environmental Affairs Worldwide*

I believe I was chosen to speak to you today by virtue of the fact that I am powered by a battery. My pacemaker, on which I am totally dependent, is powered by a lithium battery that has successfully fired every second of every day for the last eight years.

### How Does a Lithium Battery Work?

Let's go back to lithium fundamentals. The battery that currently powers the SpaceMark audio trading card is the lithium coin cell, # 2032, meaning 20 millimeters in diameter and 3.2 millimeters thick. We make an entire matrix of these lithium coin cells.

To explain further, I am going to take you back to your high-school chemistry. I am going to draw an atom with a nucleus of protons that are positively charged and neutrons that are neutrally charged. Outside the nucleus are layers of negatively-charged electrons. The first layer which is closest to the nucleus always contains two electrons. Different elements have distinct numbers of electron layers. All chemical reactions involve the exchange--giving up or accepting--of electrons.

A battery has two component parts that are separated by high-tech paper and/or cellophane "separators." (See the diagram of a lithium coin cell on the pages following.) On one side of the separator is lithium metal, which will act as the negative electrode or anode. On the other side is manganese dioxide, having four protons and four electrons and serving as the positive electrode or cathode. Around these is placed an organic electrolyte, a solution capable of conducting positive and negative charges to the electrodes. During the chemical reaction, lithium donates electrons and manganese dioxide accepts electrons.

Just sitting on the shelf, the battery is inactive; however, over time, the separator can break down limiting the shelf-life of the battery. For most alkaline and aqueous household batteries, the shelf-life is five years. For carbon, zinc batteries the shelf-life is three years, and for lithium batteries, the shelf-life is fifteen-to-twenty years, that is why I have it in my chest.

By connecting wires to it, one can create a circuit for the *talking label*. The circuit will contain the battery, a microphone, the Chipcorder<sup>®</sup>, a speaker and a switch. The battery remains inactive (except for deterioration of the separator) until one closes the circuit using the switch. If the circuit remains open, nothing happens. The reason is because electrons cannot travel across the separator, a poor electrical conductor. As soon as the circuit is closed, the

lithium anode gives up an electron, which moves through the wire. It is the movement of electrons through the electronics which will power the unit.

As the lithium anode is giving up an electron, what is happening to the other side of the battery, the manganese dioxide cathode? The manganese dioxide is accepting the lithium electron into its crystalline structure to form a new hybrid manganese dioxide. (For additional details, see the page following entitled "Lithium Battery Fundamentals.") It is interesting to note that a little space exists next to the manganese dioxide cathode and lithium anode to help maintain battery-size balance as the electrons continue to shift from the anode to the cathode; even so, a tiny amount of shrinkage will occur.

What effect does water have on a battery? When a battery cell is submersed in *pure* water, nothing will happen; however, if the water contains salts, then it will conduct a charge and short out the submersed battery. For these reasons, the organic electrolyte is almost absent of all water with a limit of only 100 parts-per-million remaining. Another reason is that lithium is highly reactive with water, and as a result, this battery must be made in a "dry room," which adds immensely to the expense of making it.

What is the voltage of the battery? We have provided a series of graphs that address voltage changes. You will note that voltage declines as more and more capacity from the lithium cell is removed. As you know, temperature also effects battery performance, but as the charts and graphs indicate, a lithium coin cell has a tremendous range of performance temperatures, making it ideal for this application. When using the lithium coin cell in the *talking label*, one could count on its performance whether the pesticide was stored in a shed throughout the winter in Wisconsin experiencing below zero-degree temperatures or throughout the summer in Texas experiencing above 100-degree temperatures.

### *Questions:*

1. What is the cathode can made of and is it chemically resistant?

**Answer:** The cathode can is made of nickel-plated steel, which is fairly resistant; however, it can be made of other substances if it needs to be more chemically resistant, but it will increase costs.

2. What is the shelf-life of alkaline manganese dioxide batteries?

**Answer:** About four to five years.

3. What are the environmental implications of disposal?

**Answer:** There are some shipping limitations. If each battery contains 60 milligrams of lithium, then you could ship 2,000 before you would meet the bulk shipping limitations

on lithium. Regarding disposal, it is nontoxic, noncorrosive, nonignitable, and nonflammable by requisite tests. So it is not considered toxic or hazardous waste; even if it were, last year, President Clinton signed into law the Mercury-Containing and Rechargeable Battery Act, which allows for all battery systems to be returned for recycling without being manifested as hazardous waste, and EPA's Universal Waste Rule also allows batteries to be shipped for recycling without being manifested as hazardous waste. Energizer Power Systems has been doing a lot of work to develop sensible recycling that is economical and user-friendly, and we will probably have a program by the year 2000, but there really isn't any program available at this time anywhere that truly recycles batteries.

**SpaceMark Comment:** Back to the issue of cost--for the battery alone, if we bought a couple of hundred-million from Energizer, the cost per lithium cell is about 19 cents. With the technology in the battery and in the chip, getting this application under a dollar is very impressive, but again, the true issue is will it work? By using a lithium cell and the Chipcorder<sup>R</sup>, it will work.

4. What is the potential for incidents, knowing that lithium is flammable when exposed to water?

**Answer:** These batteries have been out for several years, and to our knowledge, there has never been a reported incident. I even tried to see how flammable the lithium would be when exposed to water and ran my own experiment. I cut the top off a "AA" battery and dropped it into water, and only a little bubbling occurred. I wondered why it didn't catch fire. So, I took a pair of pliers and pulled the battery apart; it was like a "jelly-roll," spiral in construction. As I put it down on a table and turned, finally the water came into contact with the lithium and flames rose.

*Additional questions for any of the three speakers:*

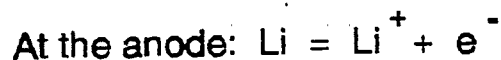
1. We have heard how you can make the audio message muted in the trading cards so that it won't drive the parents crazy, but can you also go the other way and amplify the message so that it is louder?

**SpaceMark response:** Yes, the technology is very flexible. We can go the other way and make it louder too.

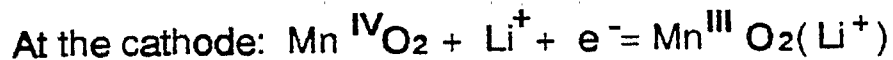
# LITHIUM BATTERY FUNDAMENTALS

## Active Parts

**Anode:** The negative electrode, electron donor (donates electron  $e^-$ ). The anode material is lithium.



**Cathode:** The positive electrode, electron acceptor (collect electron  $e^-$ ). The primary active cathode ingredient is  $\text{MnO}_2$ .



**Electrolyte:** A solution which is capable of conducting positive and negative charges to the electrodes.

Miniature Li/ $\text{MnO}_2$  cells currently utilize electrolyte #13, which is composed of Propylene Carbonate (PC), Dimethoxyethane (DME) and Lithium Trifluoromethane Sulfonate (Triflate).

Triflate ( $\text{LiCF}_3\text{SO}_3$ ) is a salt that is dissolved in a mixture of the two solvents:

- ✓ Thick liquid (PC)
- ✓ Thin liquid (DME)

Electrolyte #13 is a non-aqueous (no water) organic solution. It is almost impossible to be water-free, therefore a specification of 100ppm (parts per million) is set as the maximum water allowed in the electrolyte.

# Lithium Coin Cell

ANODE CUP (Negative Terminal)

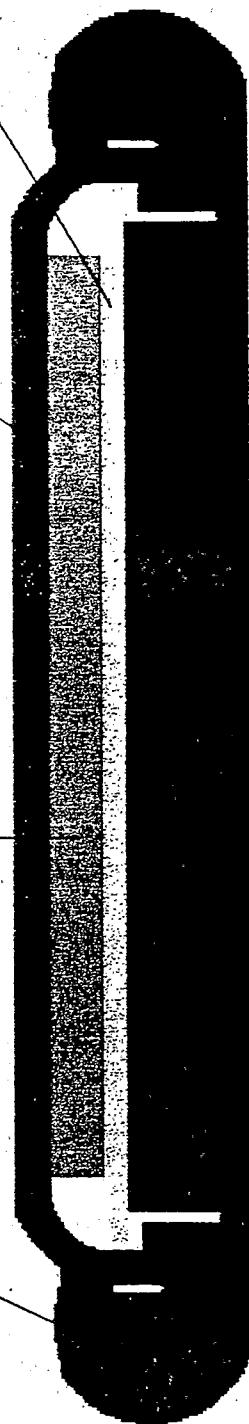
SEPARATOR

CATHODE CAN (Positive Terminal)  
WITH NIPPON CONDUCTIVE COATING

LITHIUM

GASKET (Polypropylene)

MnO<sub>2</sub> PELLET



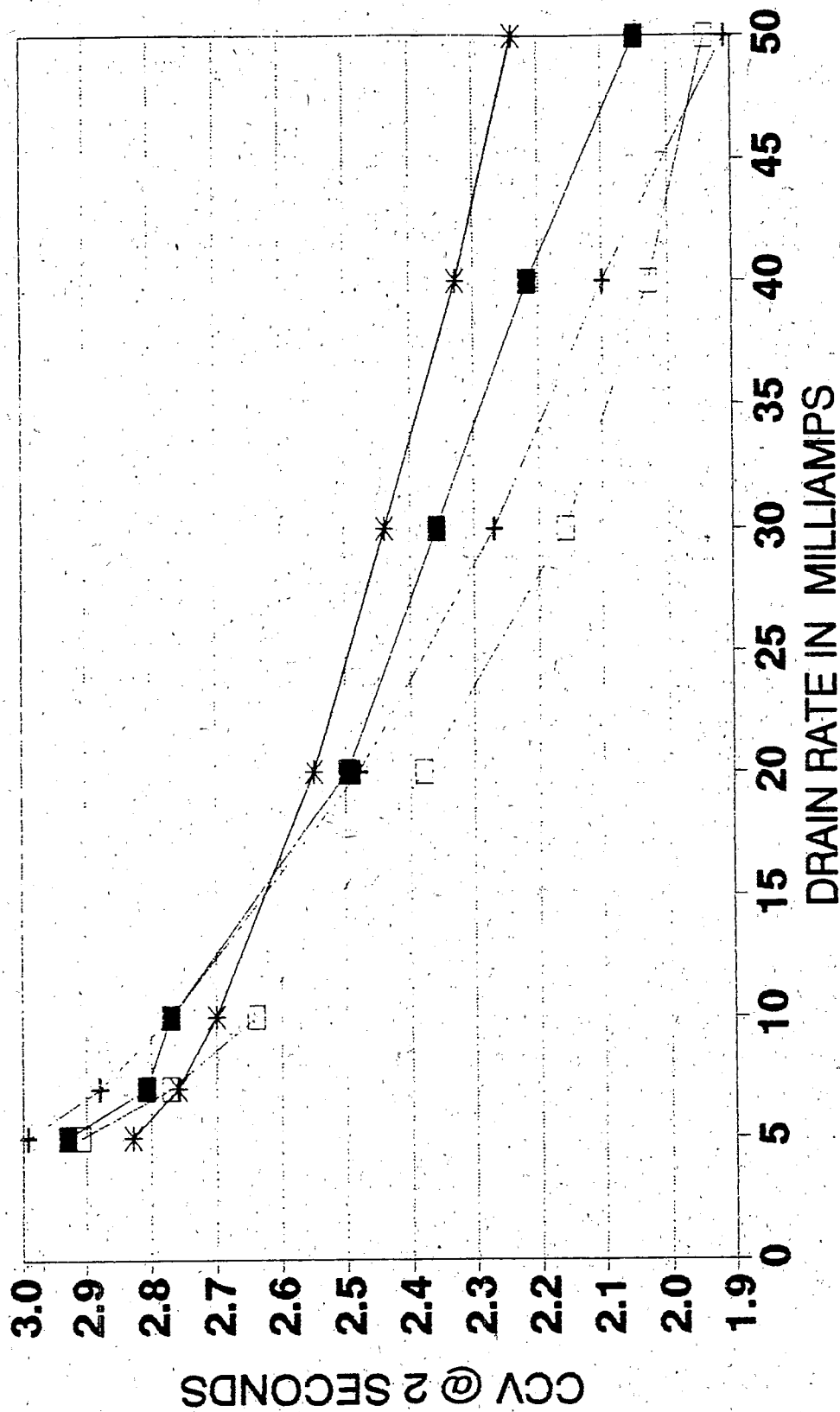
# ENERGIZER

## TYPICAL LITHIUM COIN CELLS

TYPE	DIAMETER	HEIGHT	CAPACITY TO 2.0 VOLTS			
			BACKGROUND		2 SECOND PULSE	
			OHMS	MAH	OHMS	MAH
CR1025	.394	.098	45K	29	1K	27
CR1216	.492	.063	45K	31	1K	28
CR1220	.492	.079	45K	41	1K	38
CR1225	.492	.098	45K	49	1K	43
CR1616	.630	.063	30K	58	400	54
CR1620	.630	.079	30K	78	400	76
CR2012	.787	.047	30K	60	400	56
CR2016	.787	.063	30K	80	400	76
CR2025	.787	.098	15K	148	400	134
CR2032	.787	1.26	10K	221	400	187
CR2320	.906	.079	10K	132	300	130
CR2325	.898	.098	10K	193	300	173
CR2430	.965	.118	10K	294	300	275
CR2450	.965	.197	5.1K	568	300	532

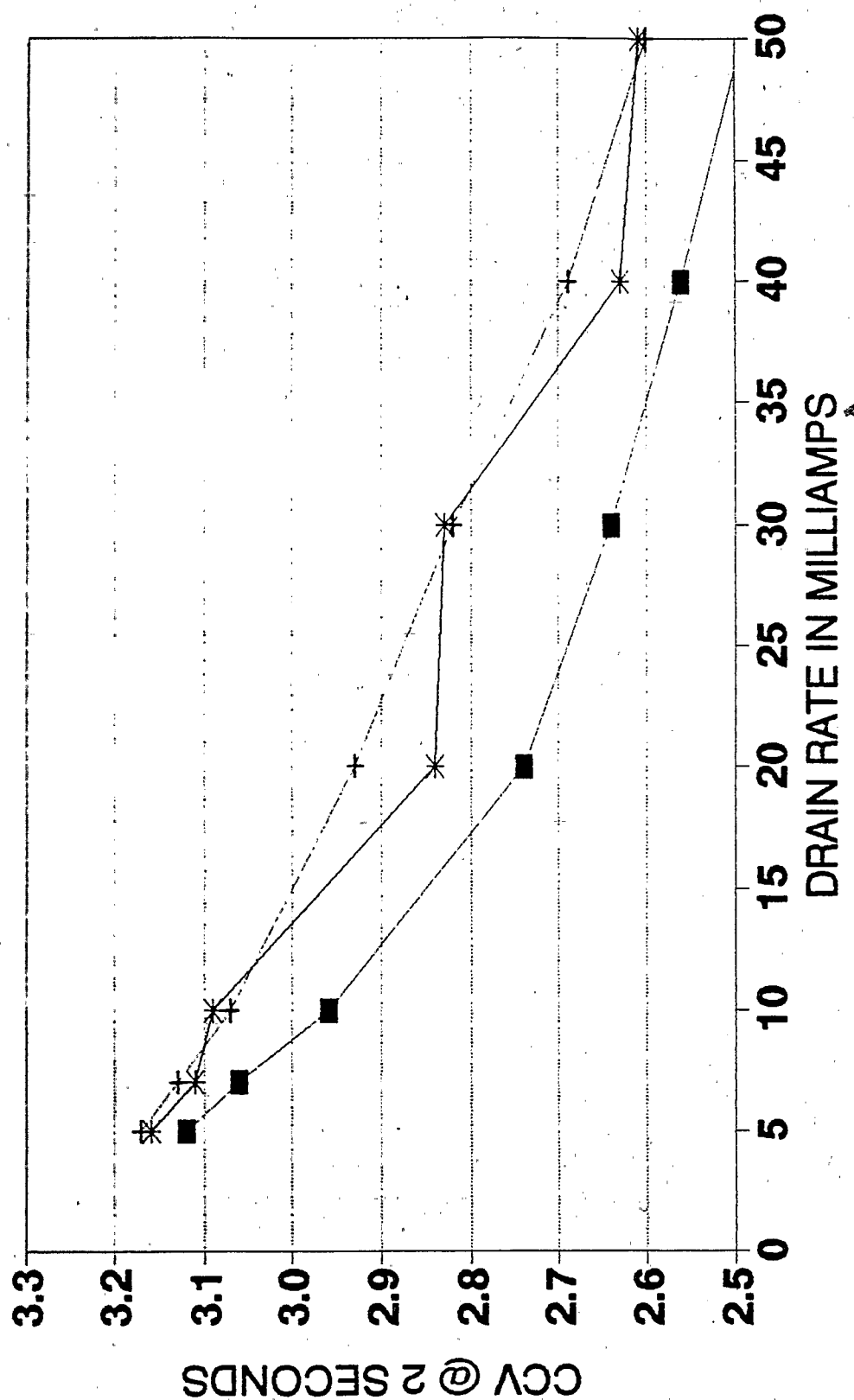


# TYPICAL LITHIUM COIN CELLS PULSE RATE CAPABILITY



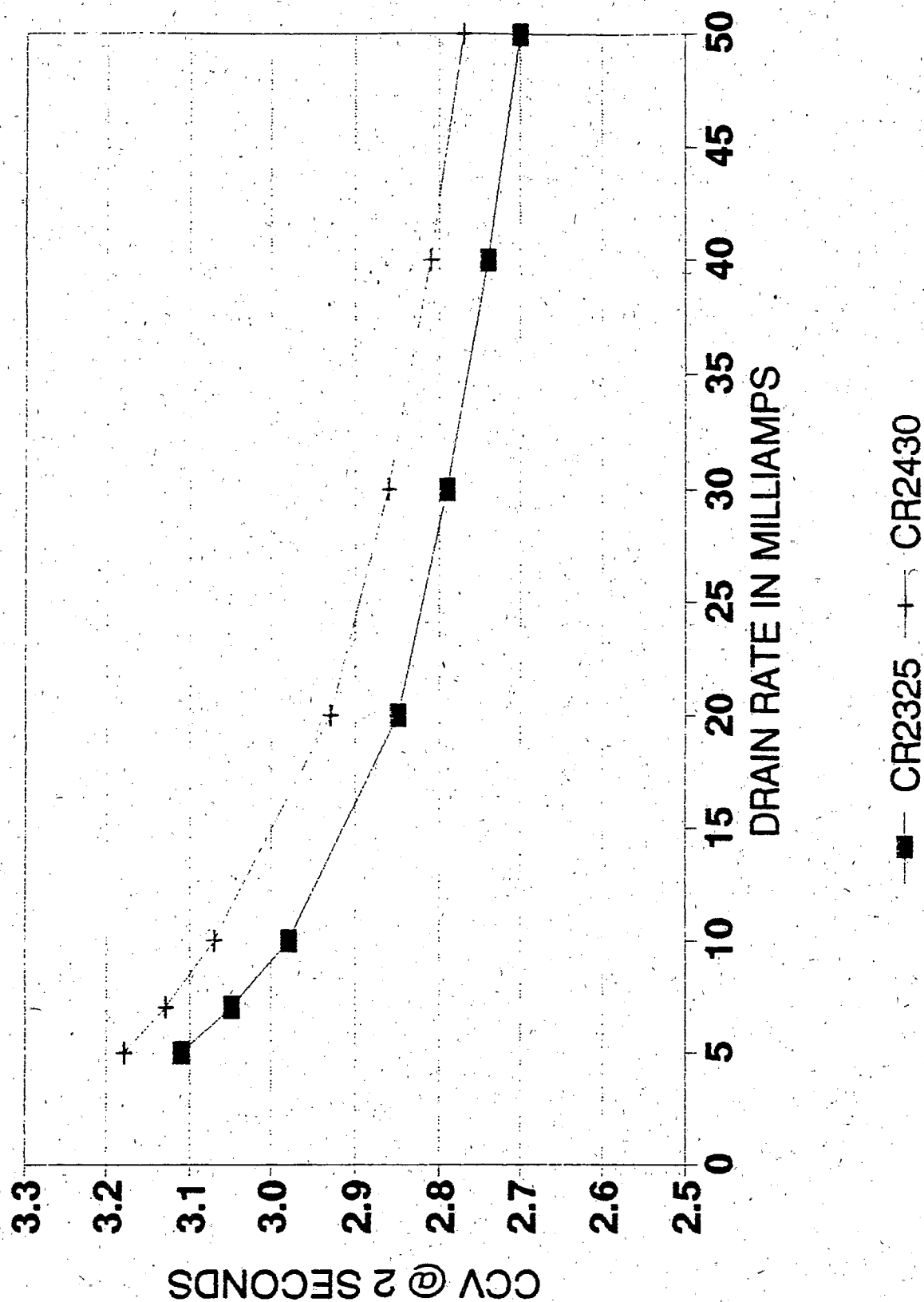
CR1216
  CR1220
  CR1616
  CR1620

# TYPICAL LITHIUM COIN CELLS PULSE RATE CAPABILITY

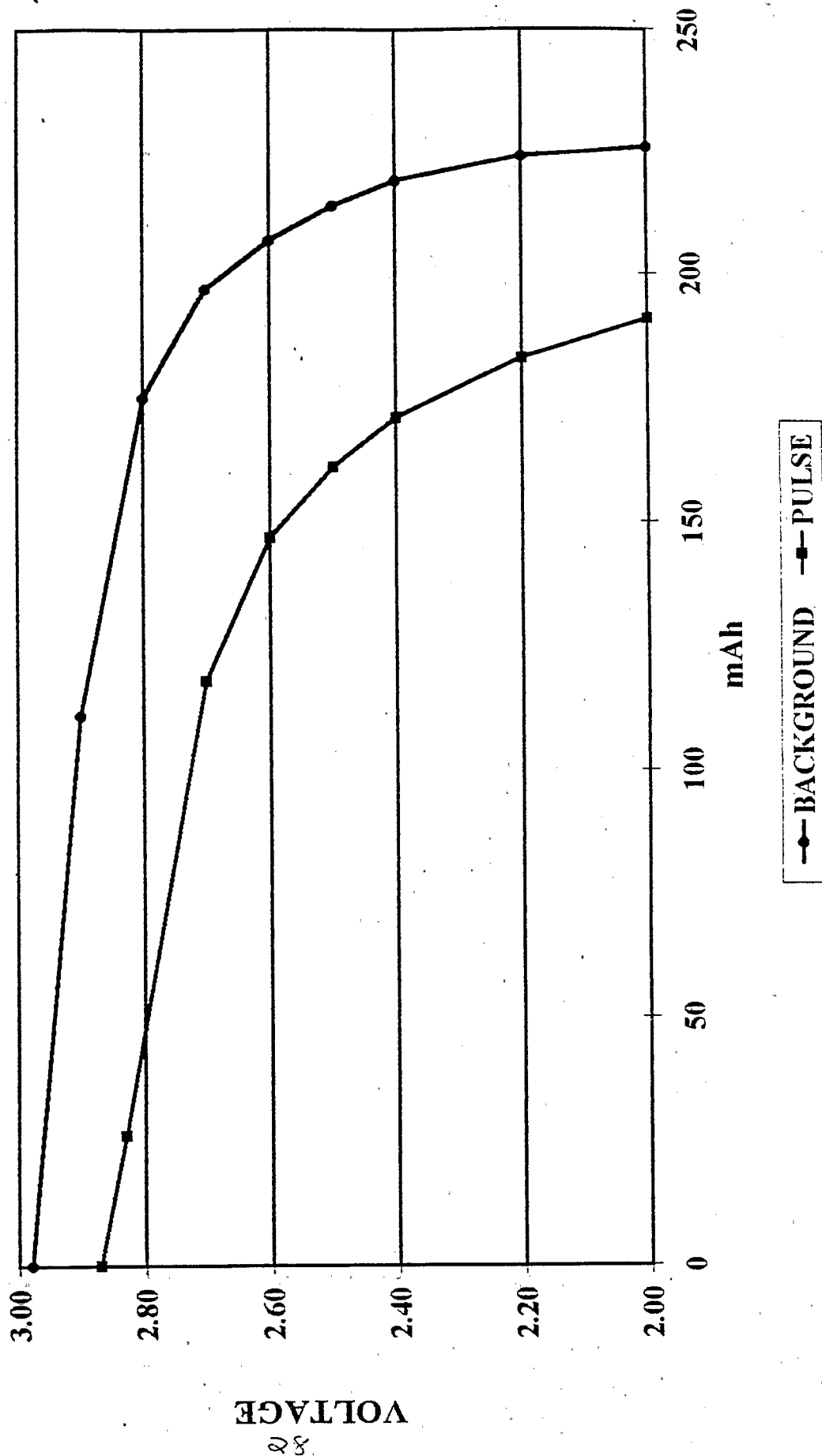


■ CR2016    + CR2025    \* CR2032

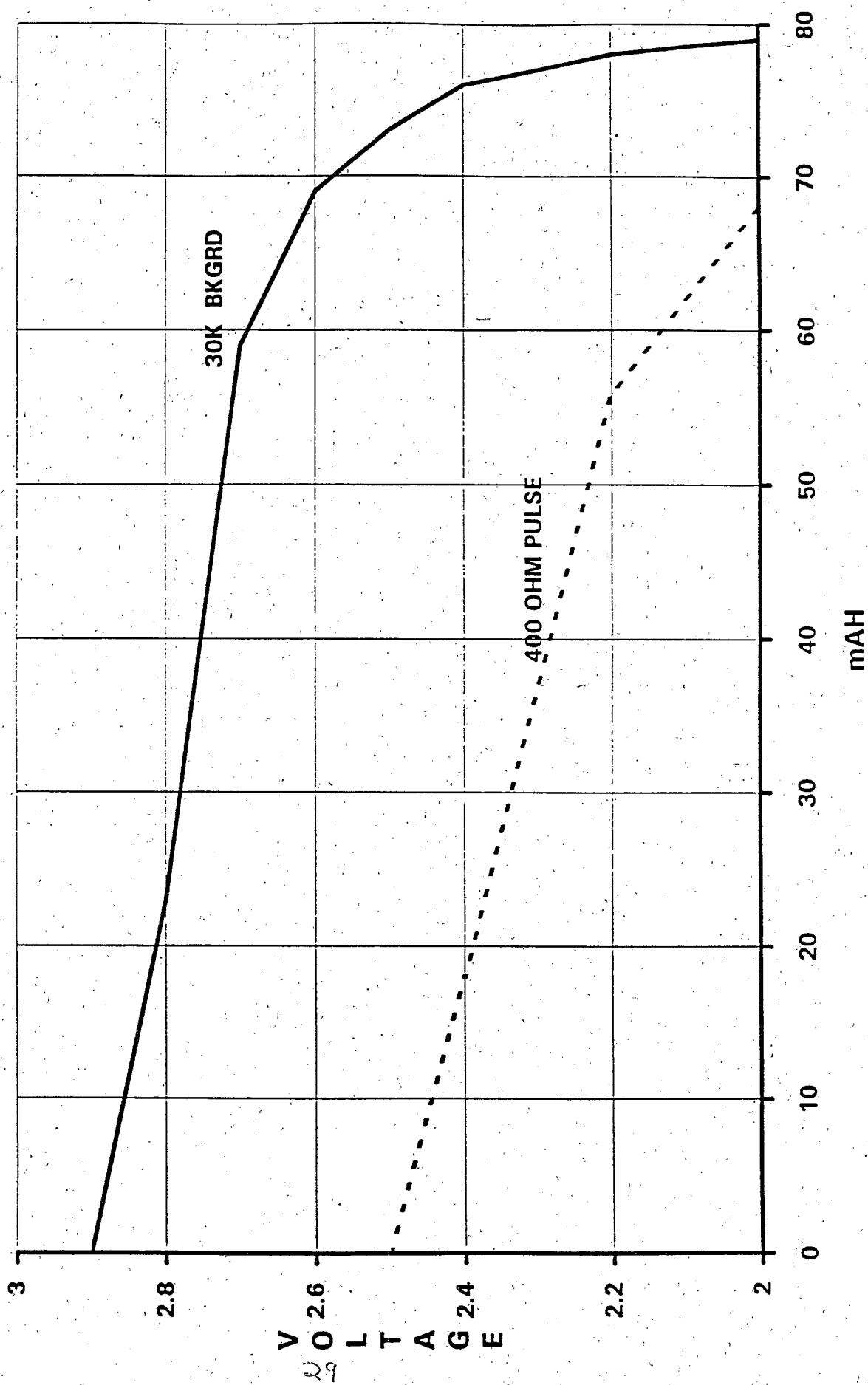
# TYPICAL LITHIUM COIN CELLS PULSE RATE CAPABILITY



ENERGIZER  
CR2032 PERFORMANCE @ 21C  
10K/400 OHM PULSE

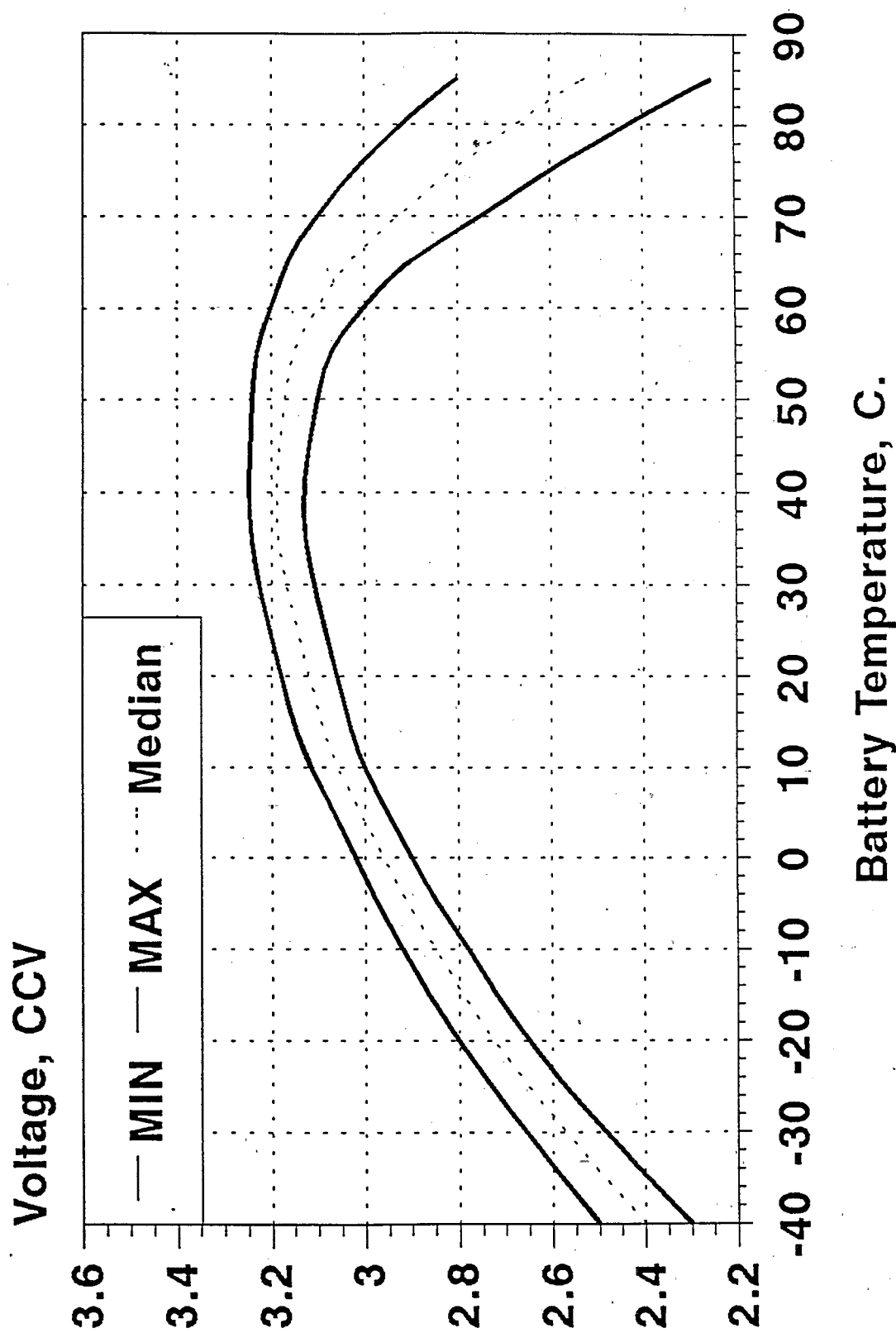


CR2016 @ -10C  
30K OHM CONTINUOUS  
400 OHM FOR 2 SECS/1PPD

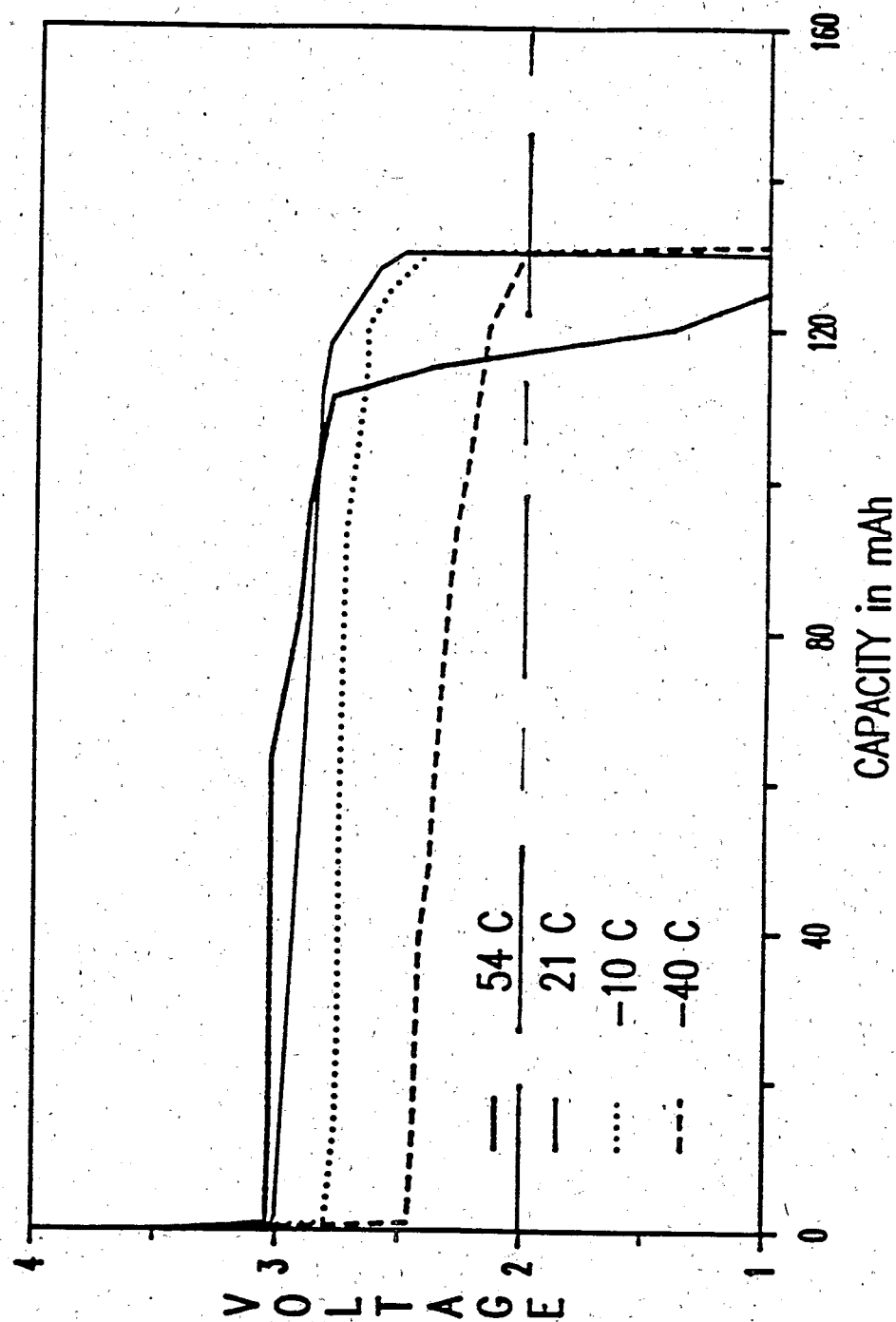


# CR2025 Temperature-Loaded Voltage Profile

on 400 Ohm x 2 second Pulse



CR2025 CELL PERFORMANCE @ VARIOUS TEMPERATURES  
15,000 OHM CONTINUOUS LOAD



**Eveready CR2032**  
**10K Ohm Continuous Background Discharge**  
**With 400 Ohm 2 Second Pulse 12X/Day**  
**to 2.0V**

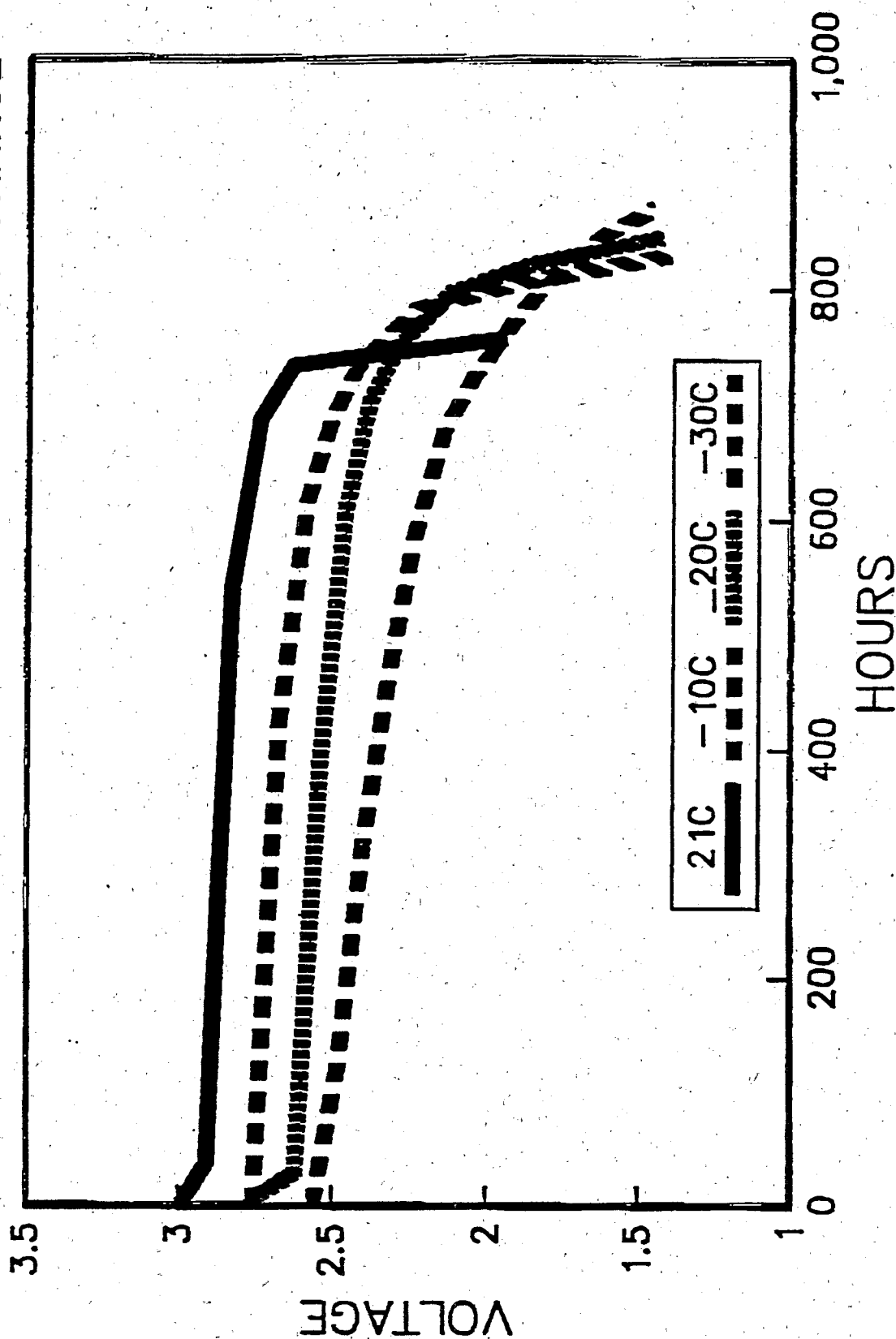
<u>Discharge Temperature</u>	<u>Service Life (hrs)</u>		<u>Capacity (mAh)</u>	
	<u>Bkqd</u>	<u>Pulse</u>	<u>Bkqd</u>	<u>Pulse</u>
21C	739	567	207	163
-10C	800	286	211	78
-20C	778	242	194	63
-30C	757	22	177	2

3/3/95



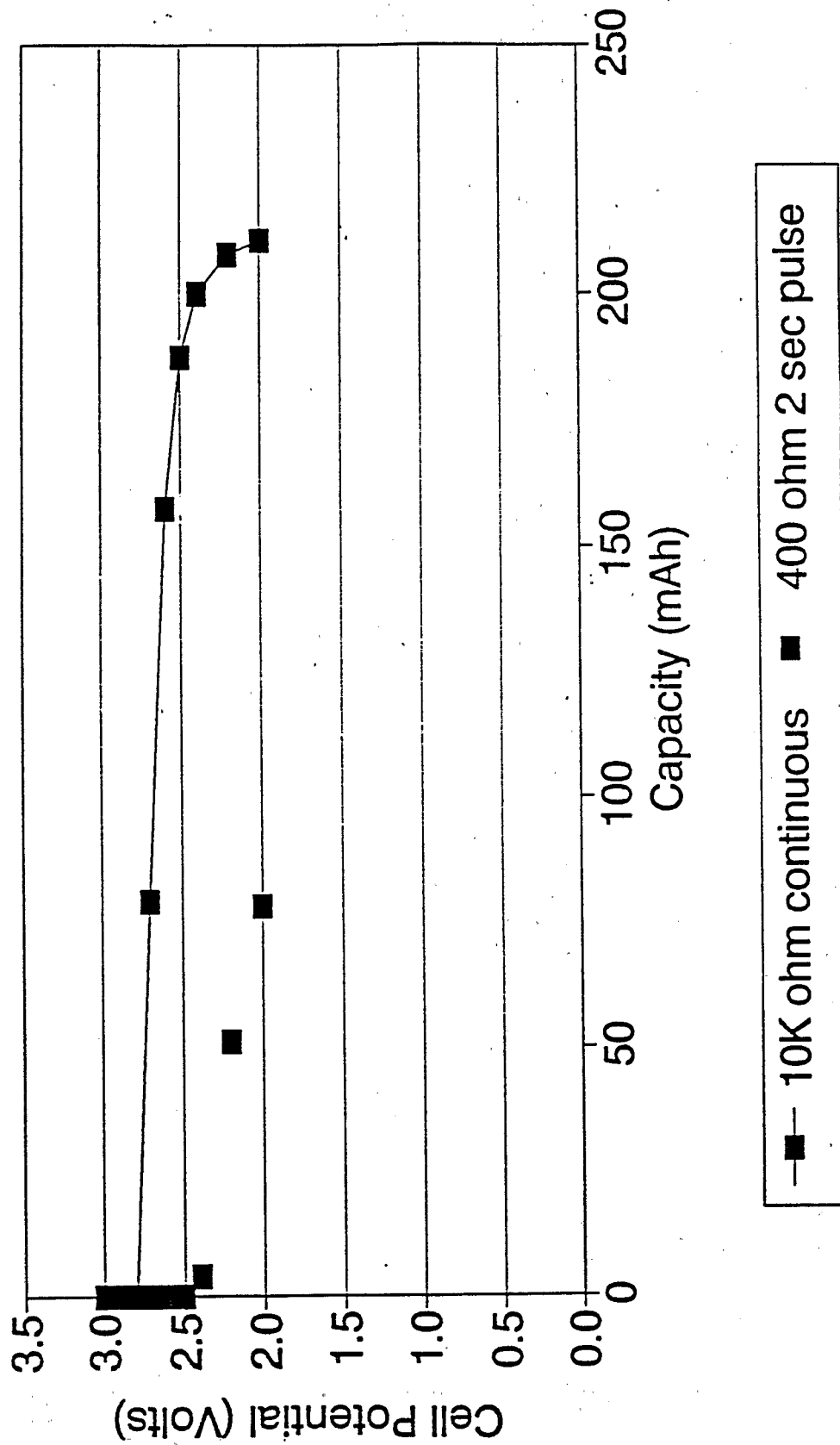
# CR2032 LI/MnO2 COIN CELL

## 10K OHM LOW TEMPERATURE CONTINUOUS DISCHARGE



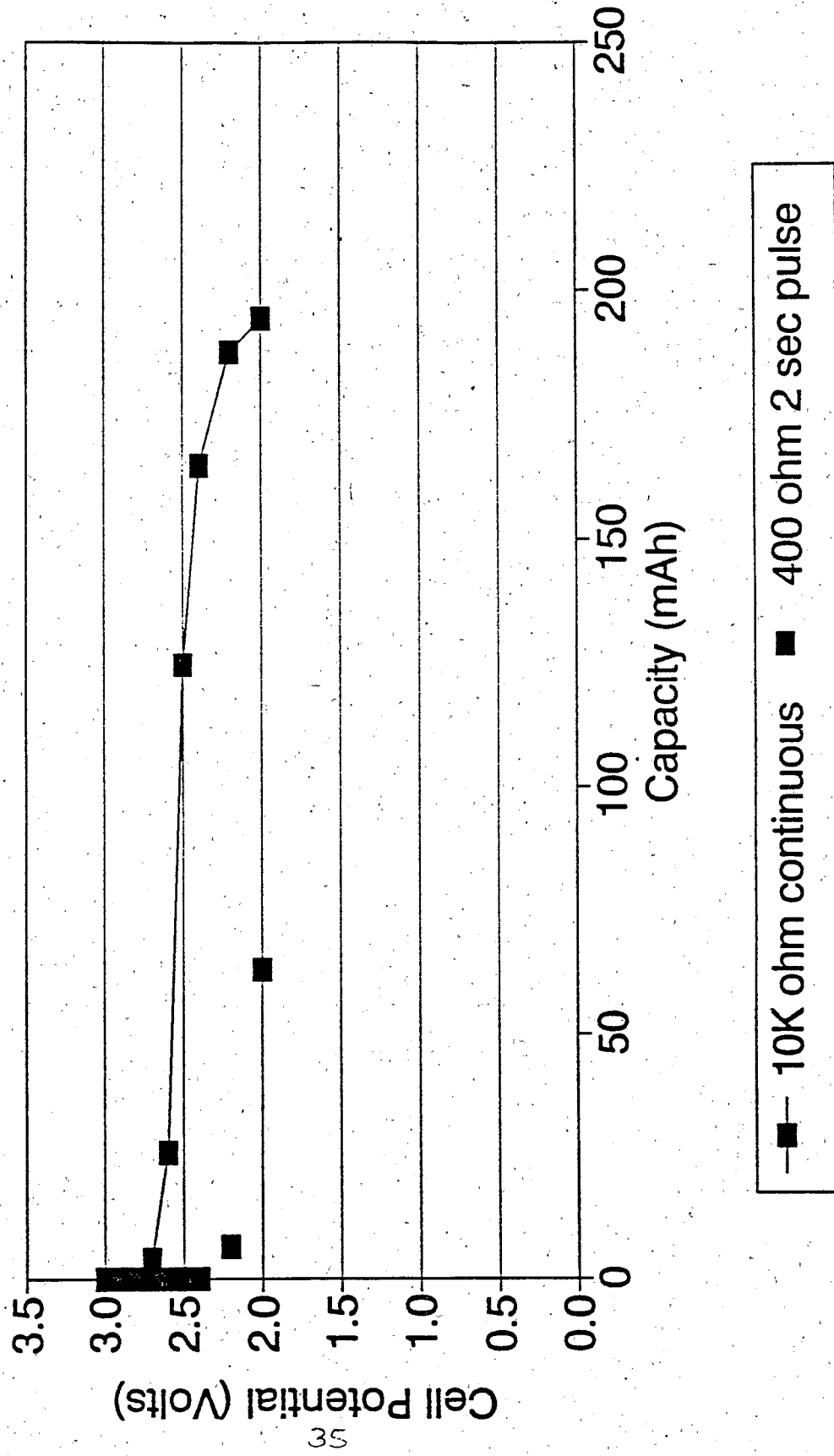
# Eveready CR2032

10K Cont w/ 400 Pulse at -10C



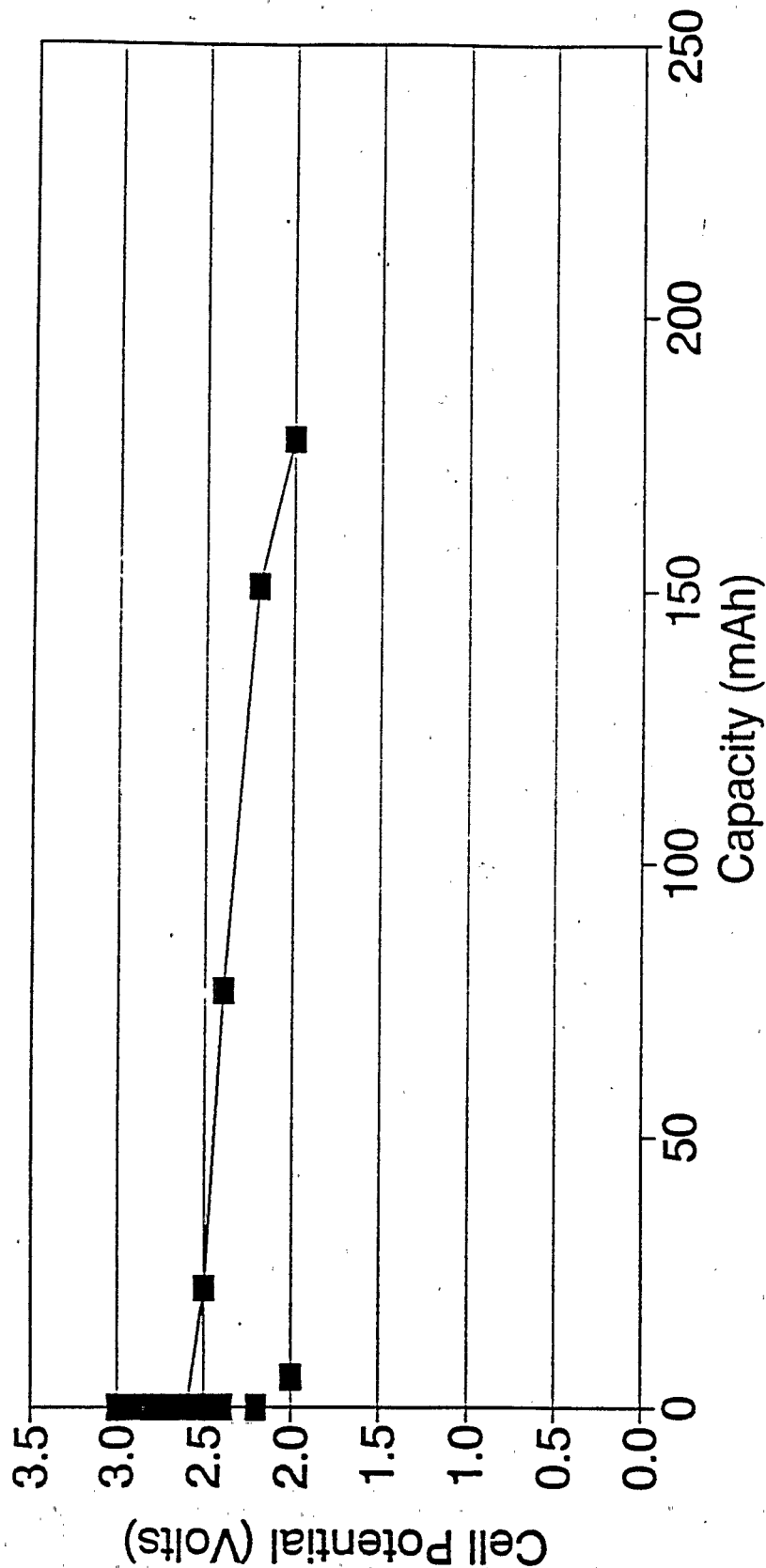
# Eveready CR2032

10K Cont w/ 400 Pulse at -20C



# Eveready CR2032

10K Cont w/ 400 Pulse at -30C

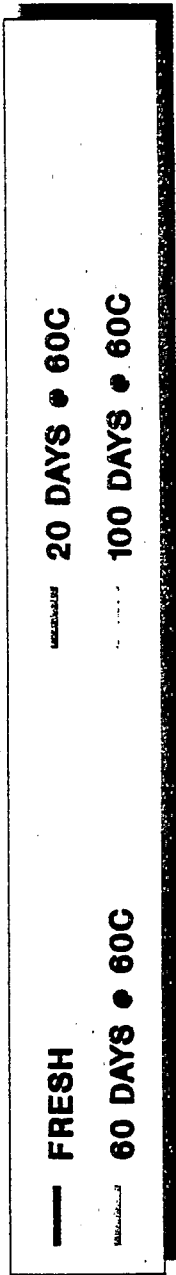
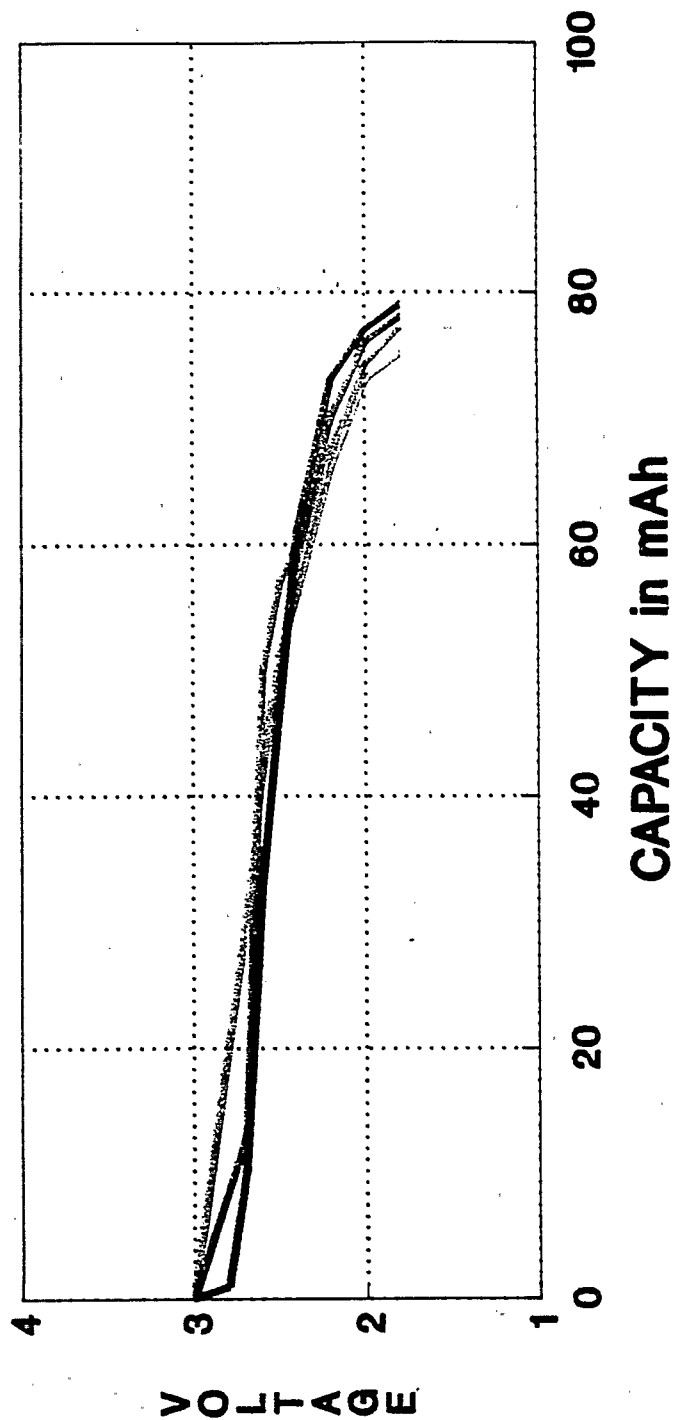


--- 10K ohm continuous    ■ 400 ohm 2 sec pulse

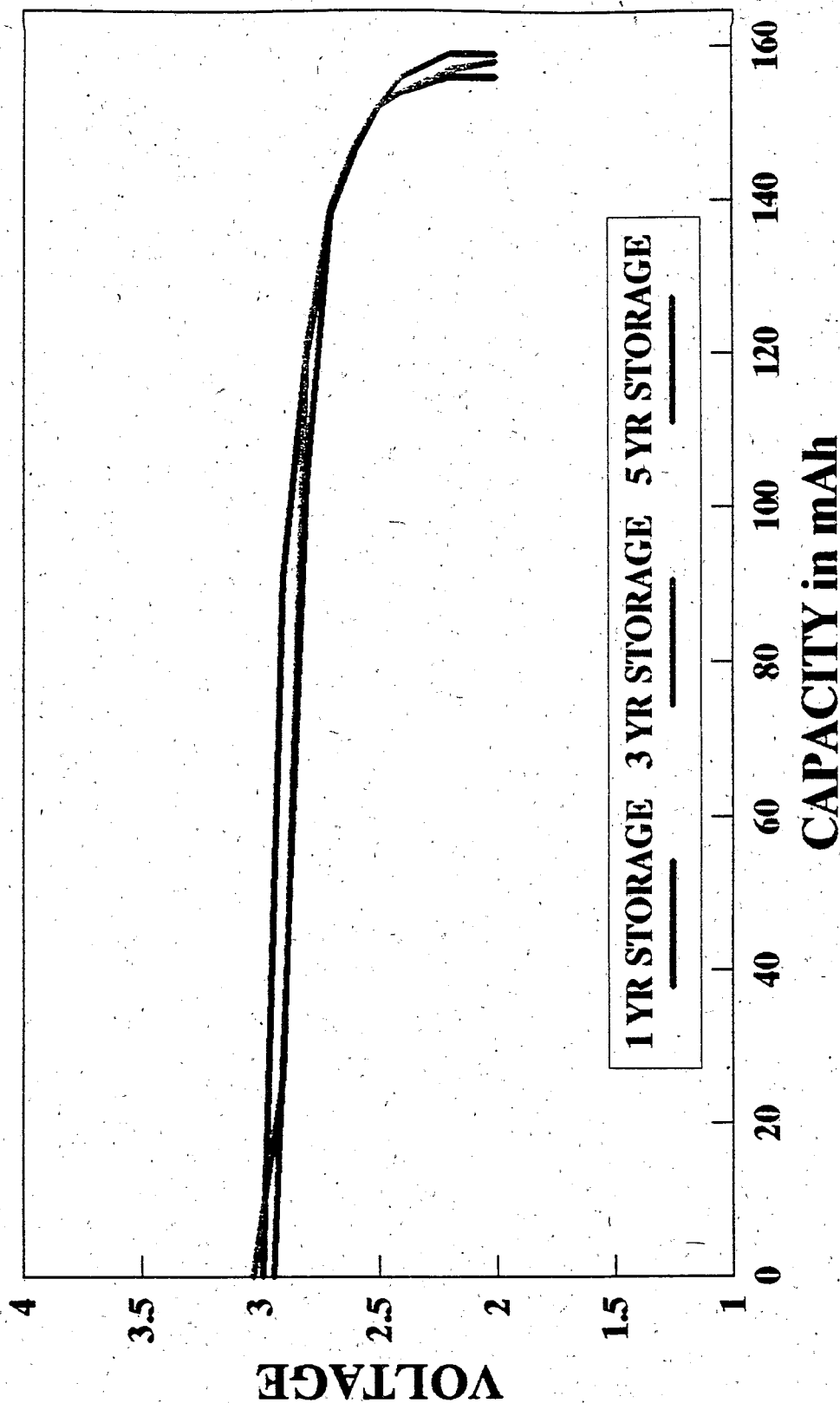
**ENERGIZER**  
**TYPICAL LITHIUM COIN CELLS**  
**CAPACITY SERVICE MAINTENANCE**

<b>DAYS @ 60C</b>	<b>% OF FRESH</b>
<b>20</b>	<b>100</b>
<b>60</b>	<b>100</b>
<b>100</b>	<b>96</b>
<b>YEARS @ 21C</b>	
<b>1</b>	<b>98</b>
<b>3</b>	<b>96</b>
<b>5</b>	<b>95</b>
<b>7</b>	<b>90</b>

# **CR2016 PERFORMANCE AFTER 60C STORAGE** **400 OHM PULSE CAPACITY @ 21C**



**CR2025 PERFORMANCE AFTER 1, 3 AND 5 YEAR  
STORAGE AT 21C  
15,000 OHM/400 OHM 2 SEC PULSE TEST**

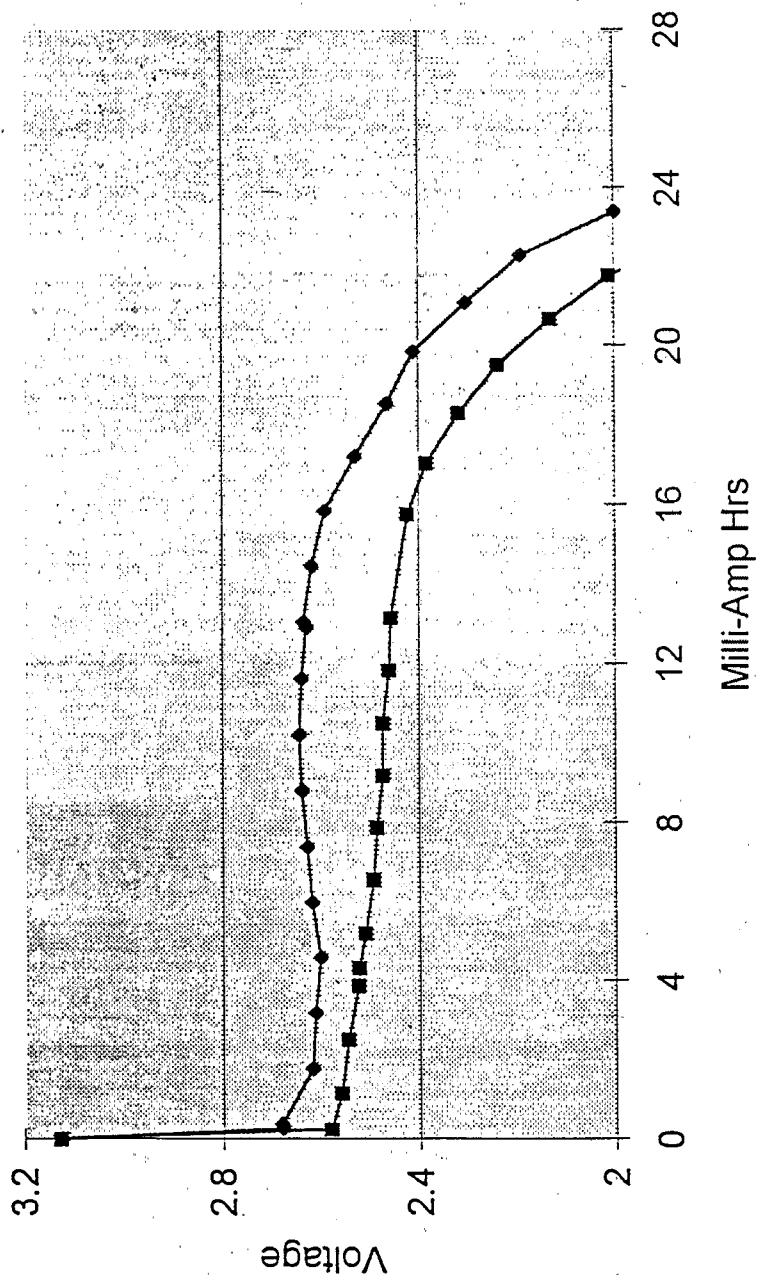


**GRAPH SHOWS 15,000 OHM BACKGROUND PERFORMANCE**

# Energizer

CR1216 PULSE PROFILE

45K/400 2 SEC PLS @ 21°C



◆ New Technology  
■ Old Technology



## Birth of the Audio Message Concept and Its Applications

*by Laura Dye, Agronomist  
Office of Pesticide Programs*

I continue to be amazed by the changes in pest and vector control in our lifetimes, the great leaps in technology occurring before us. Who would have thought when we were children, that today they would be inserting a gene from one organism into another to impart pesticidal activity. Or that we would be using satellite imagery to help us better target spray applications.

Each of these advancements first came about with the identification of a problem, and it is also true with the talking label concept. In February of 1995, many staff were in an EPA internal meeting in the Environmental Fate and Effects Division (EFED) of OPP just after the announcement of yet another environmental incident involving a registered pesticide. The EFED staff were frustrated and wondered whether anyone ever reads the Environmental Hazard statement on a label. Mr. Alvaro Yamhure, an Ecological Effects Branch scientist, offered the idea of a "talking label" as a means of obtaining greater compliance by pesticide applicators regarding correct application and use of pesticides. EFED management was very supportive, believing the idea worthy of investigation. A feasibility study was conducted to determine if the technology was sufficiently advanced to allow development of an audio label.

During that initial investigation, many others in the Agency were consulted for advice and insight which included the EFED management, the Certification and Occupational Safety Branch (COSB) of the Field Operations Division, the Labeling Unit and Product Management Team 19 (Dennis Edwards) of the Registration Division, and the Office of General Counsel. All were extremely helpful in providing the necessary expertise and/or funding for success.

Key members in the pesticide industry were also queried about a "talking label" to determine the possible roadblocks to adoption. By far the respondents identified high expense as the predominant obstacle. Interestingly, many stated that their companies had investigated the possibilities of a talking label several years earlier, but at that time, it was not technologically feasible.

In November of 1995, EPA received a call from Mr. Bert Braddock, a regional sales manager of ISD, one of the many who listened to our concept and worked hard to make it possible. Bert introduced us to Mr. Ben Everidge and SpaceMark's audio trading card. Ben responded very graciously to demonstrate his new audio trading card and help us explore how it could be modified to create a talking pesticide label.

We formed a quasi-workgroup in OPP to continue to develop the concept. Ms. Amy Breedlove, Mr. Jim Downing and Mr. Steve Morrill of the Labeling Unit and Ms. Judy Smith of COSB most notably volunteered their precious time to work with me to help identify issues and further develop the concept. In addition, many others in EPA provided invaluable perspectives about implementing audio technologies. (These individuals are recognized in the acknowledgments of this document.) During the course of this year, Ben Everidge of SpaceMark, Ross Hayden and Gerry Youngman of ISD, Terry Telzrow and Mike Atkins of Energizer have kindly offered their time and insights to help problem solve and implement OPP's first talking label prototypes.

In March of 1996, our quasi-workgroup, SpaceMark and ISD made presentations on the concept and the technology to our Program Director, Dan Barolo, and the Division Directors of OPP. Dan warmly endorsed the work effort and supported concept development, and as a result, we are inviting you to enter a partnership with us to explore audio technology and its potential usefulness and practicality in reducing pesticide misuse.

When we first started on prototype development over a year ago, the cost per unit was ten dollars. However, SpaceMark, ISD, and Energizer are continually working on reducing costs, and today, the cost per unit is \$ 1.25.

### **Why Do We Need A Bilingual Audio Label?**

In the late 1980's and early 1990's, two surveys were completed by EPA to determine pesticide use. Their findings were that a large portion of the pesticide user community does not (1) read the label prior to application, (2) follow the directions for use resulting in both over and under application of pesticides, and (3) communicate information about the pesticide being applied in the agricultural field to workers. When the Agency receives reports of pesticide incidents as required under FIFRA Section 6(a)2, about possible "unreasonable adverse effects" to humans and the environment, the paramount cause is pesticide misuse.

In addition, a portion of the U.S. population may have difficulty reading the pesticide label. According to the U.S. Census Bureau, approximately 1.5 million individuals in the United States in 1990 who were 15 years-old or older were also visually impaired. In addition, six-percent of the population have limited English speaking/reading ability. And 13 percent of the population is bilingual, with Spanish being the most commonly spoken second language.<sup>1</sup> A Spanish-English, audio label could facilitate these individuals in our population who may otherwise be unable to comply with written pesticide label instructions.

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<sup>1</sup> U.S. Census Bureau, Population, Education & Services, and Disabilities Divisions. Telephone Communications, March 18, 1995.

### **What are the Implementation Opportunities?**

EPA has created many pesticide labeling groups over the years to address complex, multi-faceted labeling issues as they arise. Within the Office of Pesticide Programs, members of Worker Protection, Storage and Disposal, Ecological Effects, and the Labeling staffs met to discuss their insights on possible implementation opportunities as described below.

#### **WPS Applications**

- o To clearly communicate when the Restricted Entry Interval (REI) expires and what the protective clothing & equipment requirements are prior to early field entry to workers who are not fluent in English or who are non-English speaking.
- o To remind mixers, loaders and applicators of the correct protective equipment that must be worn when handling the specific pesticide product.
- o To alert handlers to the hazards posed by the pesticide (i.e., corrosive to the skin or eyes), and/or
- o To communicate first aid steps in the event of an accident with the pesticide.

#### **Labeling Unit Recommendations**

An excellent use of the talking label would be communicating the dangers resulting from the use of aerosol foggers. Because foggers are flammable and can be explosive when used improperly, an audio message would more effectively communicate the potential dangers resulting from product misuse. This technology, however, may increase the cost of marketing pesticides; however, foggers are already more expensive than other formulations such that the additional cost may not be a factor.

If this technology increases the retail cost of the residential pesticide significantly (i.e., adding 20 to 30 cents per product), then a talking label may preclude consumers from buying the pesticide. However, if cost is not a consideration, then a similar tact as the agricultural audio label is recommended for the residential pesticide. Basic audio messages could communicate precautionary statements, such as

- o Keep this product away from children, and
- o For your safety and best product performance, read the label carefully.

**Cautionary Note.** An audio message can unintentionally attract children to these poisons. Therefore, adoption of this technology will require EPA and the pesticide industry to be ever vigilant to ensure that the highest standards are maintained when using child-safety caps and other forms of child-resistant packaging.

### Pesticide Storage and Disposal

An estimated 223 million "one-way" pesticide containers are used and disposed of each year. However, refillable containers are becoming more widely used, relieving some of the disposal problems caused by "one-way" containers. Because refillable containers must be sufficiently durable to withstand the stresses of extended use and handling, including structural and operational safeguards to prevent cross-contamination when the same container is used to hold different pesticide products, the components necessary for a talking label could be imbedded in these containers, allowing reuse of the micro-computer chip, and replacement and recycling of the battery. In addition, talking label technology can provide a means of educating the consumer on the proper use, storage and disposal of pesticides, addressing such issues as

- o At the point of sale, how much pesticide is necessary for effective performance to prevent consumer over purchase, and
- o Correct cleaning procedures for both "one-way" and refillable pesticide containers.

In closing, we would like to thank Sandoz Inc. and Zeneca Agricultural Products for their willingness to donate sample fogger containers and agricultural containers for use in developing the prototypes you will see on display today. Currently, the 3M company is also working with SpaceMark in exploring the use of audio technology with their respirator products; 3M has also identified misuse as a serious problem associated with respirator use. Our goal for this meeting was not to have all the potential "bugs" worked out, but rather, to explore the opportunities with you. By working together, we can reduce the risks associated with pesticides. Thank you very much.

### *Questions:*

1. You mentioned the possibility of developing the audio message in other languages, have you thought of ways to implement this technology with your pesticide export policy or in this country in other languages.

**Response:** Yes, we thought we could pursue a pilot program and determine if the use of other languages in audio messages may reduce the misuse of pesticides. For example, Spanish is spoken by 13 percent of the U.S. population. Perhaps a pilot program using Spanish audio messages may be appropriate.

2. Have any other parts of EPA or any other agencies gotten interested in this technology?

**Response:** We did invite and communicate with many other federal agencies about this technology and its potential uses--among these were USDA, FDA, Department of Transportation and OSHA. We will be releasing a summary report of this meeting which will be sent not only to you but other agencies and interested parties that may wish to pursue using this technology to reduce risk.

3. Do you see this as a replacement for the written label?

**Response:** No, we are looking at something that augments the written label, and certainly nothing could be on the audio message that is in conflict with the written label.

4. What are some of the uses of this technology has EPA considered that would enable an individual who can't read English or who has eye problems and can't read the label to use the product?

**Response:** In our internal meetings, we brainstormed many possible uses. For example, one could create a Spanish/English audio card that communicates what pesticide will be sprayed, the precautionary statements and worker re-entry interval. One card could easily be passed around among the workers.

For this meeting, we made two sample prototypes. One prototype is on a fogger can; within twenty-seconds, the message communicates the product name, directs the consumer to read the entire label before product use, communicates the precautionary statements, and again reminds the consumer to read the entire label prior to product use. The other prototype is on agricultural pesticide containers and communicates similar language in a thirty-second message. However, we also considered for agricultural products, perhaps the audio message could be best used to communicate recent changes to the label.

Or perhaps, a ten-second chip could be used to communicate the first aid on a label. Information would be readily available via a button when an accident occurs.

Or for those who may have difficulty reading the label due to eye problems, perhaps it would communicate the precautionary statements such as, "DANGER. Keep Out of Reach of Children. Keep away from eyes. Do not inhale. Do not get on skin." and other precautionary language.

5. Do you see communicating on an audio message that they need to go get someone to read the label, if they cannot read it for themselves?

**Response:** Any of these ideas put forth are good suggestions, and if you feel that communicating that message is a good idea, then we want to capture that idea in this meeting and consider exploring the concept with you.

6. Has EPA considered communicating a 1-800 number on the label where the consumer could call and have the label read in a number of languages? We have an 800 number and the thousands of calls we receive, the information that is key to communicate is the product and what it controls, application directions and the precautionary statements.  
**Response:** We had not considered it within this context, but it sounds like a great idea.

**Response from Jim Downing, EPA's Labeling Unit Team Leader:** As we continue to explore this technology, I think we'll see all sorts of potential for its use with pesticides. For example, we have a Rule being released very soon about the potential for fires and explosions from total release foggers, and I could see a lot of potential to use this audio message with these foggers for a time period, perhaps for a couple of years. That is just one example of how attention could be drawn to the pesticide label. By using the audio message, we could better educate and communicate with the pesticide user. I like our motto that the Labeling Unit developed: "Protecting life through better pesticide labeling."

## EPA's Consumer Label Improvement Initiatives

*by Steve Morrill, Co-Leader, Consumer Labeling Initiative, Office of Pesticide Programs*

What I'd like to do today is talk to you about the Consumer Labeling Initiative (CLI), which is a project that will eventually tie in very nicely with the talking label. First, I will explain how the project was initiated. Second, I will speak about some of the things we have discovered during the Initiative, and third, I will talk about where, I believe, the CLI is headed and how it inter-relates with the talking label.

The CLI originated at the highest levels of EPA management. Administrator Carol Browner had a personal interest in improving the label of pesticides and other consumer products. In her personal dealings with pesticides, she found that labels were difficult to understand and that they poorly communicated how to properly use the product. The Pesticide Program has been aware of labeling problems, and I think the formation of the Labeling Unit demonstrates the Program's resolve to address those problems.

The initiation of the CLI represents a very specific effort to conduct research to address certain problems with labeling. EPA management directed those involved (1) to make sure that the Initiative had a consumer focus, identifying what consumers actually needed from labels, (2) to ensure that any improvements could be implemented voluntarily, and (3) to be as open and inclusive as possible by involving all groups that had a stake in good labeling. One of the ways that we went about accomplishing these goals was to form a task force. We invited other organizations involved with labeling, such as the Food and Drug Administration, the Consumer Product Safety Commission, and the Federal Trade Commission, in order to prevent duplication or conflicts with present labeling efforts and to learn from their labeling programs. We also invited the States, environmental organizations, and public interest groups to participate as stakeholders on the task force. In addition, we wanted to make sure we involved the regulated community not only as labeling stakeholders but also as contributors with invaluable insights due to their ongoing efforts in market research.

The initiative was launched via a Federal Register notice in the spring of 1996. A public docket was created to capture all comments. We conducted a literature review on existing research on the known problems about labeling and its various components. Lastly, we completed a survey by conducting 135 in-depth one-on-one interviews with users of products in each of the focus categories in five major cities across the United States. As information became available from the literature review and Stakeholder comments, it was incorporated into the iterative development of the qualitative research, Phase I, and will be considered in subsequent phases of consumer research.

## Research Findings

Although there was disparity regarding specific points of view, there was also consistency, in many of the Stakeholder comments, literature review findings, and learnings from the consumer research. The comments, literature review, and consumer research addressed primarily label readability, the comprehension of product ingredient information, statements mandated by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), hazard identification, and precautionary labeling information. The research also assessed, to the extent possible, consumer reliance upon labels in purchase decisions before use of the product, for precautionary/first aid information, and at the time of container and/or product disposal. The research addressed these questions in general, and where possible, for each of the focus product categories. i.e. indoor insecticides, outdoor pesticides, and household hard-surface cleaners.

The qualitative research was used as a means of identifying and probing issues concerning messages on the selected product category labels, and do not reflect statistically representative responses. Most of these general findings and other more specific ones not highlighted here warrant further exploration or validation in the next phase of the CLI, which will include quantitative consumer research. Other findings may be more appropriately addressed through channels of communication other than labeling. Next, I will summarize each of the key general findings.

### Use of Product Labels by Consumers

The available research suggested that whether a consumer read a label depended on the type of product and their familiarity with the product. Most consumers read the label if the product was new to them and if there was concern or an expectation of potential hazard if it was used incorrectly. The literature and consumer research findings indicated that most consumers felt that household chemical products were safe if used according to directions. In general, the research indicated that First Aid information was read only when there was an accidental exposure. Purchasers of insecticides and outdoor pesticides read the label primarily to understand product efficacy and directions for use. Consumers with children or pets were more likely to read precautionary labeling for pesticide products before purchase, but this largely applied to the indoor insecticide and outdoor pesticide product categories. In general, consumers did not read disposal directions, but did report that they stored pesticides in the house or garage out of the reach of children. Stakeholders commented that FIFRA-mandated disposal directions often conflicted with local government household hazardous waste program requirements.

Some Stakeholders suggested, since many people were not reading the label, that efforts should be undertaken to educate consumers about the importance of reading the label.



## **Product Label Readability**

During the qualitative research, consumers mentioned that they wanted less technical words on product labels, and some Stakeholders suggested that labels be at a fourth or fifth grade reading level. Two major problems identified were too-small type size and inadequate color contrast. There was also consensus that when there is a significant potential hazard, the label should prominently instruct consumers to read the label. When they were read, consumers judged labels on household cleaning products not regulated by FIFRA to be easier to read and understand than those on FIFRA-regulated products. Some Stakeholders suggested that a standard format for key information would improve readability. A few Stakeholders recommended fold-out labels, but consumers interviewed in the qualitative research expressed concern that opening a fold-out label before purchase would obligate them to buy the product. Moreover, when they opened the booklet, many consumers expressed a sense of information overload that discouraged them from reading the information. Another area of investigation was the location of label information. One finding was that consumers look at the back panel for ingredient labeling, but FIFRA requires labeling to be on the front panel. While consumers thought labels could be easier to read, they did not suggest information that could be deleted.

## **Comprehension of Ingredient and Mandated Label Statements**

Public interest groups recommended that comprehensive ingredient information, including full chemical names and even Chemical Abstracting Service (CAS) numbers, must be required for all ingredients. Some Stakeholders provided evidence that consumers did not read or comprehend chemical names, and it was heard repeatedly from consumers in the qualitative research that they did not understand chemical names. For indoor insecticides and outdoor pesticides, qualitative research revealed that some consumers look for specific ingredients in comparison shopping, but they generally recognize only the active ingredient common name. There was also consistency in comments, the literature review, and the consumer research in finding that consumers did not understand the term "inert ingredients."

Mandated statements that consumers did not read and did not understand included the statement, "It is a violation of Federal law to use this product in a manner inconsistent with its labeling."

## **Hazard Identification and Precautionary Labeling**

Consumers also consistently misinterpreted the EPA mandated labeling, "Hazards to humans and animals" to mean "hazardous to humans and animals." It was also interpreted as a stand-alone statement and not as a heading. Stakeholder comments and the CLI consumer research also showed that consumers prefer the term "first aid information" over "statement of practical treatment." The literature review (with support from the information learned from the

qualitative consumer interviews) led to the conclusion that consumers understand that the term Danger is more serious than Caution or Warning, but there was not a clear distinction between the latter terms. Some consumers perceived outdoor pesticides and indoor insecticides to be very hazardous (as opposed to cleaners and disinfectants). The implications of consumer reception to new or additional labeling information merits further investigation. Public interest group Stakeholders urged the Agency to provide extensive and explicit hazard information on the label for all ingredients, including acute, chronic, and reproductive health hazards, noting particularly risks to children and pregnant women.

### **Next Steps and Recommendations**

EPA worked with the Stakeholders, through meetings with our Partners and open discussion forums with others wishing to participate, to categorize all the findings into one of the following three categories: 1) labeling issues requiring further development or statistical validation through quantitative research, for example, the need to establish the hierarchy of importance of label content to consumers, and how satisfied consumers are with each specific label section (e.g., ingredients), 2) labeling issues not requiring further validation, for example, consumers prefer the term "first aid" over "statement of practical treatment," and 3) education, policy planning, and coordination issues.

Based on the above categories, the recommendations in the report focus on the following areas: 1) a subsequent phase of quantitative and secondary research review, 2) interim label improvement measures, and 3) label-related education, policy, and procedural improvements.

### **Recommendations for Quantitative and Secondary Research**

EPA recommends that the next phase of the CLI include a quantitative assessment of consumer comprehension, attitude, behavior, and satisfaction of (FIFRA and non-FIFRA) labeling and an evaluation of labeling alternatives. In addition, undertaking a subsequent literature review is recommended to explore more detailed existing information in the specific topic areas to be examined during the quantitative phase of research. This research will result in comprehensive and specific recommendations for: 1) label design and content improvements, 2) regulatory or policy changes needed to allow improvements, and 3) additional research to further clarify issues or to test alternative labeling.

Following completion of the second phase of research, EPA will combine the findings from the primary and secondary CLI research phases over two years with input from CLI Stakeholders to develop recommendations for the Administrator.

### **Recommendations for Interim Label Improvement Measures**

Based directly on the findings and information presented in Phase I of the CLI, the Office of Pesticide Programs should consider three areas as an immediate starting point for label improvement: 1) broader use of common names for active ingredients in addition to chemical names approved by International Union of Pure and Applied Chemistry (IUPAC), 2) use of the heading "first aid" instead of "statements of practical treatment," and 3) inclusion on labels of phone numbers for general or emergency information. The pesticide program can take steps right now to improve information on labels in these three areas.

### **Recommendations for Education Activities**

Recommendations call for the formation of a Product Label Consumer Education Task Force. The task force would be comprised of staff from Federal, state, and local government agencies and interested CLI Stakeholders, and would be mandated to recommend and implement consumer education activities throughout EPA that emphasize the importance of reading the label.

### **Policy Planning and Coordination Activities**

Recommendations in these areas will focus on establishing processes for identifying and presenting the other important factors or considerations that go into the development of labels, so that once it has the consumer perspective in hand, EPA can make sound policy decisions based on all relevant factors. These other factors include the scientific, legal, regulatory, business, and right-to-know issues that may affect how information should be presented on labels or through some other mechanism. Some specific recommendations are as follows:

**Standard Labeling Policy Coordination and Development:** The Office of Pollution Prevention and Toxics (OPPT) houses responsibility for general coordination of environmental marketing and labeling issues and policy development. Many of the general learnings from the qualitative research, Stakeholder comments, and literature review will be furnished to those who manage labeling programs and related policy issues throughout EPA, in other Federal Agencies, and at the state government level. In addition, these learnings will be considered appropriate in the development of EPA comments on developing international industry standards (e.g. International Organization for Standardization or ISO work on environmental labeling) for the Organization for Economic Cooperation and Development, and in the development of environmental labeling programs.

**CLI Research Process:** The process used for this pilot was well received by the EPA Partners and Task Force Members. A work group of CLI Stakeholders and others

should be formed to develop recommendations for EPA use of the CLI process to perform other Agency policy work.

**Pesticide Labeling Needs Vary:** The Office of Pesticide Programs should recognize the difference between consumers' label needs and the label needs of agricultural sector users (for whom FIFRA labels were first developed). The Program should take steps now to explore how to eliminate policy or regulatory barriers to address this difference.

**Continued Coordination Between EPA and FTC:** The EPA and FTC continue to coordinate on environmental marketing and labeling issues across all environmental media programs (e.g., pesticide programs, trade and environmental activities, environmentally preferable products guidance, Energy Star, etc.). Specifically, the Office of Pesticide Programs' Labeling Unit is attempting to better coordinate claims approved for pesticide labels with the FTC Guidelines for Environmental Marketing Claims.

**Form Inert Ingredients and Health and Safety Information Work Groups:** Form one or two small work groups made up of representatives of all interested Stakeholders to work with the Office of Pesticide Programs, and charge them with the development of a white paper that identifies and discusses the scientific, legal, regulatory, business, and right-to-know points of view as they relate to the presentation of ingredient and health and safety information on registered pesticide labels.

**Storage and Disposal Labeling:** Form a work group made up of representatives of CLI Stakeholders to work with the Office of Pesticide Programs to identify all current applicable storage and disposal regulations and issues affecting storage and disposal for development of a white paper.

**CLI Pilot:** The CLI was designed as a pilot project. EPA should determine whether to further examine additional product categories.

**Standardization of Environmental Messages on Product Labels:** EPA should consider if it is possible to somehow standardize messages on product labels beyond pesticides (e.g., format, elements of the message).

In summary, the goal of the CLI is to foster pollution prevention, empower consumer choice, and improve consumer understanding by presenting clear, consistent, and useful safe use, environmental, and health information on household consumer product labels. I appreciate this opportunity to report on the CLI's Phase I findings and to be a part of this meeting to introduce audio technologies and how they could tie in with EPA's consumer labeling improvement initiatives.

## EPA's Preliminary Pesticide Compliance Perspectives

*by Phyllis Flaherty, Chief of the Compliance Branch,  
Office of Compliance*

Each of the previous speakers introduced many ideas about this technology and how it could be implemented with pesticides and pesticide labeling. I will be highlighting areas where I see potential for enforcement issues to arise.

First and foremost, correctly implementing audio messages with pesticides is a quality control issue; however, its implementation probably is not any different than the quality control issues associated with advertising. Advertisements can't make any claims that differ from the EPA-approved label. But, as you know, we have seen some deviations.

I heard one of the speakers suggest using this technology to communicate Restricted Entry Interval (REI). I think that is a good idea, but I am little nervous about it because I also understand the idea is to recycle and market the chips. As a result, there could be opportunities for mistakes that can lead to enforcement action. For example, if the label on one product says twelve hours, and another label says twenty-four hours, but someone gets the little components mixed up, and the wrong chips are accidentally replaced onto each pesticide, then you would have strayed too far, resulting in a "claims differ," and that's a violation. The label is the law, and it's the label with the product. Perhaps this is not where we are right now because from listening to the other speakers, it sounds more controlled, but further down the road, you might have the idea that you can pop out the chip, put in another one and have a different message which could lead to mistakes. So, exceptional quality control is something to keep in mind.

Another concern is child resistant packaging. I noticed that on some of the product prototypes, the audio unit was being placed in the top of the container lid. That's probably fine, but you do need to be thinking about whether your homeowner product requires child resistant packaging, and whether changing the top part of the container may require you to recertify your product. I think there's probably lots of ways to deal with it so that it won't be an issue, but, at the same time, be aware. In addition, this technology will make the pesticide more attractive to children. I think I heard the gentleman earlier say that, "Even if the child pushes the button a hundred and twenty times to hear the label read...". If a child can push the button, then someone is not following the "Keep out of reach of children" precautionary statement on the label. If, in fact, we are not following the instructions on the label, and implementing audio messages makes the pesticide more attractive to children, then that's probably a downside.

Another potential issue is refillable containers. Refillable containers will probably be refilled at the dealer's location. New regulations which are being proposed but are not yet final

encourage and foster the use of refillable containers. If the label is being changed when these containers are being refilled, then making sure that the chip gets changed with consistent information is also important. I don't think any of these issues are major enforcement issues; however, I see the potential for enforcement issues arising if people don't pay attention to their quality control efforts.

Regarding disposal and recycling of the units, when I heard these discussed previously, the batteries and the little chip would be returned, and the unit would be recycled rather than going into the environment. If the unit is returned and reused, then relabeling issues will be involved. Again, I don't think this raises major issues, but a label statement that says, "Recycle it," or how you recycle it may be needed.

A final issue that may arise is establishment registration. Under FIFRA, producing and repackaging a pesticide are defined very broadly. Anytime one changes the container, the labeling or the packaging of the product, one has to have an establishment number on the unit and submit an Annual Pesticide Production Report. My presumption is that much of this activity will occur at the registrant's establishment or by contract with those already registered and reporting. On the other hand, if the technology progresses where others would be involved further down the distribution chain, then establishment registration will be an issue. If the dealer will be changing the chips such that the container is being repackaged, then the dealer must have a pesticide establishment registration number and submit an Annual Pesticide Production Report. At that time, we may want to consider amending the regulations to provide an exemption from this requirement.

## EPA's Preliminary Pesticide Enforcement Perspectives

*by Jesse Baskerville, Director of Regulatory Enforcement,  
Office of Statutory Enforcement*

My responsibilities are very, very narrow and that is the single issue of enforcing the law. In this case, we have something that's being presented in terms of audio labeling, and as Phyllis said, I'll put that in quotes: "In terms of the definition, we don't feel that it is labeling by the statutory definition nor is it a substitute."

If it's not butter, sometimes we use oil, but with labeling one can't substitute. So we do expect to see your approved labeling to accompany a particular product. If you add something in addition in terms of audio, we hope that particular addition is something that is already on the label. I know that this can be a very attractive concept to marketers for a particular product, and they might want to get creative in terms of what might go on an audio label. Representing EPA, I know what we would like to hear in that audio message but that may not necessarily conform with what a particular marketer would want to see on a label. And to make it attractive and to distinguish one product from another, all kinds of things may show up in that particular audio. As a result, those are the things we'll be concerned about because we can enforce against "claims that are made that are different from what is on that label," as Phyllis noted.

I was on Capitol Hill with Dr. Goldman, and she was testifying before the Senate Agriculture Committee. I noticed that the Committee loved to ask one question in particular. One of the congressmen asked, "Dr. Goldman, do you agree that pesticides are beneficial to our agricultural practices and help us to feed all the hungry people in the world?" And of course she said, "Yes." He threw up his hands and exclaimed, "Well, there you have it! What are all these regulations about"?!

Well, we are also dealing with very poisonous, in some instances, extremely poisonous substances. These substances are designed to destroy things, and we have to be careful how we use them. We need to approach this exercise from that particular standpoint. For example, what is unfolding in Mississippi right now is a misuse of the pesticide, parathion. It takes a couple of teaspoons full to kill a human being about my size. So, you can guess how much it takes to kill a child, and it was sprayed illegally in homes for pest control. We've tested nearly a thousand homes in Mississippi. A hundred and sixty-six of those homes have been evacuated or the families have been temporarily relocated. Presently, almost seven-hundred people are in temporary living space because of this parathion misuse.

When the two applicators involved were asked why they misused parathion, one of those individuals said, "Well, I did not know." He apparently didn't read the label. He said, "I didn't know it was so poisonous, or I wouldn't have done it!" The other one said, "Well, I don't think it's so bad. I sprayed it in my own home, and I'm not going to leave." Even though he should have evacuated with his family, he did not leave. He didn't particularly care whether it was extremely poisonous or not. They were simply looking for something that would do the job. So that's the diversion of a product.

Now, in this case, hopefully for one of those individuals, maybe the audio message would be very helpful. Regarding the other applicator, one has to deal with that person in a different way because the individual doesn't seem to care about the consequences of his actions.

We are very much interested in this process, and we will be following it very closely because there is a lot of potential for people to go astray using this kind of technology. An example might be if one confused marketing concepts with very strict regulatory requirements that must be followed when using pesticides. Thank you.



## State Perspectives

*by Mary Ellen Setting of the Maryland Department of Agriculture,  
representing the Association of American Pesticide Control Officials*

Ms. Setting could not attend the meeting due to illness; however, she submitted these talking points to be included in the report.

The following issues need to be considered when using audio messages to alert consumers about pesticide use hazards and agricultural producers about Worker Protection Standard requirements:

- \* Any additional means to effectively inform consumers about proper pesticide use would certainly be a welcome asset to existing pesticide education programs.
- \* Applicability would appear to be limited to consumer products since information that could be relayed in this manner would be of limited nature and could not be very complex. Workers would not usually have access to actual pesticide products.
- \* Would the added cost to the product justify the return in benefits of using the technology?
- \* Does the addition of the computer chip and/or battery raise concerns about disposal of the product?
- \* It appears that EPA's Office of Enforcement and Compliance Assurance is satisfied that a number of enforcement issues that come to mind can be addressed. However, if false or misleading claims are made, what recourse do states have in terms of enforcement?
- \* In order for the message to be effective, it needs to be reinforced and repeated to enhance understanding. Additional, education programs should accompany this aspect of consumer awareness such as an audio display at pesticide retail stores reminding consumers to read the label and public service announcements about the importance of reading the label would reach a wider audience.
- \* While audio technologies may address one issue, the added benefit to getting consumers to read the label will be voided if the product labels are poorly formatted or difficult to read and understand.

In summary, the concept of using audio technologies to enhance consumer awareness and to reduce potential hazards to the user and the environment is one that can be supported with several caveats. This concept could certainly be added to the current *arsenal* of methods to promote safe and proper pesticide use. However, it appears that the number of issues that would be resolved with this technology would be limited.

*Additional Comments submitted by other state regulatory agencies:*

**Gary J. Calaba, Oregon Department of Environmental Quality:** This technology would be helpful in reducing pesticide misuse. However, I want to point out that some states, such as Oregon, have pesticide residue management programs. In Oregon, *pesticide residue* means residuals generated from pesticide use, such as pesticide-contaminated rinsates from washing the interior surfaces of pesticide equipment. Our program is geared towards not generating any wastes. Thus, when developing audio messages about *pesticide disposal*, it would be prudent to remind folks that some states may have requirements that supersede, or at least, augment the *pesticide waste disposal* instructions on a pesticide label.

**As communicated to Laura Dye, EPA:** Early on, when we began this project, we contacted OECA, Office of General Council, the Regions, Industry and the State regulatory agencies to ensure early feedback as to whether this audio message technology would be useful and to find out what enforcement and compliance issues would arise. The states, of course, have an unique prospective and offered that it may, indeed, reduce misuse problems; however, they wanted to remind us that, in certain instances, the states have restrictions or programs that supersede the EPA-approved labeling on the pesticide product. They also requested that they be kept informed so that they can stay involved as this technology progresses.

## Recycling and the Label

by Robert L. Denny, Agricultural Container Research Council (ACRC)

We are talking about how to communicate some, very complex information effectively, and we are trying to figure out how best to do it. I had a lesson about this just recently. I went home to eastern North Carolina, and I had a rare occasion to go Christmas shopping with some of my *little old lady* aunts. We went out, and as we were going into the shopping center, my mother said, "It's windy," and my Aunt Bert said, "It's not Wednesday. It's Thursday," and my Aunt Mary Ellen said, "I'm thirsty, too. Let's go get a drink."

I had the occasion to be concerned about the efficacy of communication some fifteen years ago. A much younger man became aware of this problem when I was Director of the state program in Maine. A large number of containers were starting to build up around the countryside, and we began to realize what was the source of the fish kills occurring every spring. As the creeks and streams overflowed their banks, the trout and the salmon were killed. When we investigated, we found pesticide container storage sites above each area where fish kills were occurring.

So, we thought, wouldn't it be a much better idea if these containers were returned where we could be assured that they were properly rinsed and discarded. From the onset, preventing the waste of energy was a consideration, and we also began to think about the pesticide label, which clearly states triple rinse or the equivalent. The necessary information was already present and included a prohibition against dumping. But, what was missing was *effective* communication to mixers, loaders, and applicators to ensure their understanding about how to properly handle these containers.

We tried enforcement actions and compliance activities, but that wasn't the long-term solution. The end result was that containers were stockpiled in barns, and the landfill still wouldn't take them. The landfills needed assurance that the containers were safe to handle.

As a consequence, we passed an authorizing statute in 1983 creating this program to collect pesticide containers. What we needed was some way to return all of the pesticide containers after use, and do it in a way that this was effective. Also, communicating the *why* was really important—not just triple rinse and no open space dumping. Our approach was to communicate the *why* by gathering everyone in a room to explain how the containers ought to be handled. Shortly thereafter, three other states, Oregon, Minnesota and Iowa, set up their own independent programs. Certain commonalities exist among each of these programs.

At this point, pesticide manufacturers and formulators realized they had a role in making a better program. It was 1989, and a pilot program for the American Chemical Industry was just beginning in Mississippi. The Industry wanted to determine how to get the pesticide containers

returned, how expensive would it be, and how to divide the costs fairly. What Industry discovered was--

- \* Key components that cannot be omitted are *education, enforcement and compliance monitoring*. Sometimes critical information has to be communicated in Spanish or other languages in certain communities. Initially, implementation without enforcement and compliance monitoring was tried. How these containers came back, I think, is very instructive for today's discussion. They came back in every shape imaginable until there was a trained enforcement person working with the program. Having the container properly rinsed and returned was the key to success, and compliance was absolutely necessary.
- \* The other thing that Industry discovered while working in partnership with the States was that there has to be *effective communication*. One has to be willing to do whatever it takes to set up a collection site, and these sites have to be advertised. In addition, by establishing an inspection process that required individuals to personally return their pesticide containers afforded us the opportunity to communicate better techniques on how to clean and return containers. Human interaction was very important to the program's success.
- \* What we also began to discover is that pesticide labels had to be removed in order for the program to be really effective and that pesticide labels are printed on a tremendous amount of paper. As we increased recycling efforts, the resulting paper became a serious problem. Some pesticides labels are booklets that, on average, are 20-to-25 pages in length. As a result, there is significant amount of associated paper pulp.
- \* I think sometimes that we have a hard time recognizing the sheer number of containers that are sold and could be recycled. It's sometimes difficult to visualize, but one small agricultural community will fill a cotton trailer many, many times over in the course of a season.
- \* I think that it's important that when we are thinking about this addition to containers, that we understand some of the impediments to this process. The number of container-collection sites in the United States is staggering. In some areas, we may have half-a-dozen sites within a county and that requires a huge infrastructure. In one respect, that's a wonderful thing because we are getting back an awful lot of containers. However, we also had to understand that certain transportation issues result.
- \* Turning the containers into a granulation worked best. I predict in a few years we'll be using railcars and highway vehicles that handle these materials in bulk. Clearly, we are trying to produce clean granulated flake that can be used to create something. *But what is that something?*

- \* We also must be flexible when setting up a program. To show you how flexible we have to be--in Lancaster County, Pennsylvania, for instance, we have over a dozen sites because of the distance that an Amish farmer will drive his horse and buggy to drop off his pesticide containers. In other counties out west, the farmer may drive seventy miles to go to a movie. So, greater distances to a container drop-off site may not be such a problem. One has to take in the cultural practices of the area and fit that to the community that one is serving.
- \* A role exists for local governments. More and more, county and city governments are the authority that runs the solid waste facilities in the United States, and fewer pesticides dealers are involved with container collection.

After 1989, the program began to slowly grow, and in 1992, the Agricultural Container Research Council (ACRC) was officially formed. From 1993 through 1995, we had significant growth. In 1996, we added Massachusetts. This year, we will likely add New Hampshire and Utah. Throughout this timeframe, Hawaii has had an independent program, but we believe it will be joining the ACRC in the next few years. We expect to have full-participation by the conterminous 48-states next year. Then, we will focus on Puerto Rico and Alaska.

What does this mean in numbers of containers? In 1996, we collected more than six million pounds, and in 1997, we predict we will collect over seven million pounds. How does that translate in numbers of containers? If these containers were all two-and-a-half gallon jugs laid lengthwise, their path would extend from the White House in Washington, D.C., to the suburbs of Salt Lake City, Utah.

We are currently having the farmer pull off the label before the container is recycled. Obviously, I have been thinking about the additional costs of pulling off these devices for just one type of container and to say that I'm concerned would be mild. What do we make these things into? Potential uses for pesticide-residue impregnated plastic are somewhat limited. We wouldn't want them to be used to make Fisher Price toys, for instance. We would want them to be controlled uses such as storage pallets or other commercial uses which don't involve human handling.

I would like to close with these remarks. In the late 1980s, there was a task force formed to deal with the ever increasing complexity of pesticide labeling. The task force identified the need for a label proper. Certain information needs to be imparted with the pesticide such as precautionary statements. However, a general use manual would better communicate certain repetitive and necessary information such as *explaining why* certain steps or procedures are required. As a result, the manual would enhance compliance with labeling and would be easily available for reference when stored in the applicator's vehicle. The explanation as to why a

procedure must be followed is absent on today's pesticide label. Maybe it's time to rethink the label and make it more streamlined for the future. Maybe that's the true long-term solution.

## **Audio Message Technology and Pesticides: Panel and Audience Discussion**

At the beginning of the panel discussion, one of the audio prototypes, the Roach Defogger Three, was played:

"This is Roach Defogger Three. It is very important that you read the entire label before use. Keep out of the reach of children. Do not breath vapors. Cover counter tops, foods and utensils before use. Do not use more that one defogger per room. Keep away from open flame and electrical appliances. Remember, read the entire label before use."

**Laura Dye, EPA:** That is twenty seconds, and we have covered all the precautionary language in that timeframe. We also covered some of the important key elements such as covering counter tops.

**Amy Brown, UM Cooperative Extension:** I assume that was music playing in the background. As an educator, I would want the message to come through, not the music. The music was very bright, happy, and extremely distracting to the message.

**Laura Dye, EPA:** This was our first attempt at this. We recorded it, I guess, nine months ago. We've learned a lot since then. What should be or could be done. It was a very interesting, exploratory experience for us. One thing we'll certainly note right now is that music shouldn't be played with the message.

**Panel Discussion with Jim Jones as Panel Moderator:** I'm here today to moderate the panel on questions and answers. Before we get started, I would like to ask that each of you who have questions or observations that you would come up to the microphone and introduce yourself, first, before directing your questions to the panel. I would also like to encourage our panel members to ask questions of each other. Before we get started, if the panel members could reintroduce themselves for the audience's benefit. Let us know who you are representing.

### **Panel Members**

*Gerry Youngman, Eastern Regional Sales Manager for ISD, Manufacturer of the Talking Chip.  
Mike Atkins, representing the Marketing and Sales Department for Energizer.*

*Ben Everidge, Chairman and Chief Executive Officer of SpaceMark International Corporation.*

*Jim Downing, Team Leader for the Labeling Unit, EPA.*

*Terry Telzrow, Manager of Standards, Product Safety & Environmental Affairs Worldwide for Energizer.*

*Kevin Keaney, Worker Protection Regulations and the Certification and Training Program in Field Operations Division of OPP, EPA.*

**Jim Jones, Moderator:** Okay, why don't we open it up for questions either from the group or from panel members themselves.

**Question:** My name is Kevin Cannon. I'm the Director of New Business Development for the Solaris Group. We are the makers of the consumer products, Ortho and Roundup. They are used throughout the nation and my question is very basic. I would like a summary of the state of the technology. Summary meaning, the feasibility in terms of costs and some of the implications that we might face if we were to use this type of technology in our consumer labels.

**Ben Everidge, SpaceMark:** In terms of the feasibility, the labels, the technology, everything that is needed to make another label talk is already in production. We went into the marketplace about May of 1996 with what we considered to be our production unit. The chips can be interchanged. A few components need to be added for each message to be longer. The chip technology is in place all the way up to the four-minute chips. There are a couple of chips that are coming online in the Summer of 1997, which will make this product considerably cheaper. We started off, as Laura mentioned to you, over a year ago with a product that was about \$10.00 a unit. We are already down to a chip that runs us roughly \$2.50. We will be down to \$1.50 by summer of 1997. Maybe even a \$1.00 for a new chip that's coming out called the *Diamondback*.

Perhaps Gerry can talk about that. In terms of the components, they get cheaper by volume. We have a lot of labor involved to piece together all those materials. I gave you five charts during my presentation that explained all of the technology that is in the chip. If you open it up, you'd see that there's a lot of material to make the chip talk. In terms of pricing, if you are going to buy in 5,000 unit minimums, the price is about \$ 8.00 per unit. If you, as an Industry, want to come together and bundle those pieces, the price comes down *dramatically*. Yes, we can get it down to \$1.25, if we are dealing with tens of millions of units. If we are not, then it's going to be a higher price. It's just a matter of labor, supply and demand, and what we can get out of our manufacturers. But the technology is in place. There's nothing much more for us to do in terms of tailoring it to a particular product or service. It's just a matter of a couple weeks for us to put it in production. Most of the time, we use our own molding. We would provide the talking unit just exactly the way you would want it and deliver it to whoever you specified. That's the technology that we can do today, six-to-eight weeks on the market for you.



**Question:** I'm John Impson of the USDA. All morning, the topic and discussion has lent itself to consumer education in regards to either this concept or use of pesticides by the urban consumer, not the agricultural product consumer. Who do you see taking the lead on the educational program for consumers?

**Jim Downing, EPA:** Well, let me see if I understand, "by take the lead," what you were thinking about.

**John Impson, USDA:** Who is going to conduct the educational program?

**Jim Downing, EPA:** Maybe I can answer that by trying to clarify our role from the Agency's standpoint. Looking around at some of the policy, procedural and regulatory issues, I see it fitting into some of the areas we have already explored: the label itself, the advertising, and the shelf unit. And, I see it being a great asset to the pesticide educational programs that are already in existence such as the worker protection educational requirement that was mentioned and with the bilingual educational requirements. I think that, from our prospective, that's where we see our roles. At this point, I don't know whether it's appropriate for the Agency to be taking any other kind of a lead. I see there's lots of opportunities here for leadership in the Industry, for product stewardship or enhancement of the product's communication capability. There are the Consumer Labeling Initiative findings included in the CLI report that suggest consumer education. There are a lot of possibilities that we are trying to explore. Any other EPA compatriots that can add something to that?

**Jim Jones, Moderator:** Any other questions?

**Question:** Hi. I'm Bob Fugitt with DuPont Agricultural Products. I wonder if anybody has looked at the psychology of presenting a message this way. I gather that the chip you are currently using have been marketed from an entertainment use, and there is a whole psychology around that. You want to push the button, and you want to hear the message. I'm concerned that there may be some conflicts with the messages--one that somebody wants to hear versus one that aggravates and no one particularly wants to hear. I'm thinking about those dial into telephone data bases, and you have to listen to punch one, two, three or whatever as you try to get the information you want. When you can't get it easily, you find yourself getting frustrated. I also wonder--I know someone in the audience was identified as a teacher--I'd like to know if you only have twenty seconds, I'm not sure how your going to get an educational nugget that will work. It would be great if you could. I don't think that we've overused the term, consumer education, this morning. I think we all agree that the more of that we do, the better we will do it. I see John Impson sitting over there, and I think, to a large extent, we are really ignoring one of the best educational facilities that we have, and that is the Cooperative Extension Service of the USDA. The people who actually understand EPA and who explain person-to-person why you need to do something as opposed to saying, "Don't do it!" or "Do

it!", but I'll go back to my original question. What's the psychology of the message you want versus one that you might not want?

**Ben Everidge, SpaceMark:** I'll approach more from the standpoint of advertisement and a business prospective. We understood this whole technology to be more of a supplement to the warning on the label--the fact that you need to read it, and that you are dealing with a chemical that can be potentially very hazardous to your health, if it is improperly used. That's our primary approach. In terms of how you get the message across, you can get a warning across in twenty seconds. Somebody, typically, is going to be inclined to want to read more if they hear somebody saying to them, "Be careful with this product. It can be bad for you if you don't use it properly. I think there would be an inclination to go ahead and want to delve a little bit deeper into the product. If they already know that product, inside and out, they'll bypass the warning. But the fact of the matter is the warning is supplemental not primary. The primary warning is on the label. What we hope to do is to encourage more people to read the label before they use the product the first time. In terms of educating, the more messages that are out there, the more you can use this product as an educational tool. It's a very valuable educational tool. There are a lot of studies that have been done by teachers. I happen to teach, on occasion, at the University level. There is a proclivity of students to want to hear it, or to see it before they want to read it. They like to get that medium. They like to get their message through that medium. They will then go back and read it, and they will add to their knowledge base once you've got their attention, but hearing it or seeing it helps get their attention. I think that it would work this way as well. Whether or not we have enough products to make it an educational tool is another matter.

One of the items that crosses over into the question about the costs--if we are able to take, let's say for example, Solaris got five million units, and there's five other products they have that are also five million units, we are not giving them a price for five million units. We can actually do a price for 25 million units because that same player unit is going to cost us the same to produce, only we get the cost efficiency by the volume. Putting a message on it doesn't really matter. What message we put on it is just a matter of putting pins on the chip and the chip recording it. So we can change the message very easily, but you can't build the player as easily. If there are ten or fifteen different messages, then in that twenty-five million, you have an educational tool. An educator might be able to put it together and use it in classroom instruction. Perhaps those chip cards could also be supplemented with a VHS tape that could be used during classroom instruction. Maybe it's classroom instruction that could be used over the Internet because the chip technology can transfer to the Internet, and you can pick it up as a sound bite. Maybe it can be used along with other audio recordings, or some other printed material. How creative you can be in terms of what you want to teach about that product will depend on whether it has the educational value. One of the things that we have talked about, as a for instance, was recycling this technology into a chemistry class and teaching the chemistry students about the chemicals used in the pesticide products. It's a good way to show them how

it works. The battery discussion earlier today was a classic example of how do certain chemicals interact with one another. How do they work? What's the complexity? What's the simplicity? What's the volatility versus the stability of the product or those chemicals. There's things we can do along those lines, but I don't think we should forget what the primary mission is, which is, for right now, to help people read the label, to encourage people to read the labels so that they are not endangering themselves when they use the chemicals.

**Jim Jones, Moderator:** Jim, as a follow-up, I wonder if the Consumer Labeling Initiative or anything that we are doing is going to test that theory?

**Jim Downing, EPA:** Well, I certainly think that it can. I think Steve alluded to that in the quantitative research. Basically, do we know, or do we have some sense about the general consumer--including the agricultural and commercial applicators--what the general reaction of pesticide users will be to this kind of technology? In other words, I'm thinking about some other applications not as sophisticated technology. For instance, back in the 1970s, car manufacturers decided to put in voices to tell you that your door was ajar or that your lights were on.

**Mike Atkins, Energizer:** I think the question is can this technology provide some level of value to the pesticide industry? I think it becomes readily apparent that it can if used properly. Is it going to eliminate pesticide catastrophes, perhaps not, but will it enhance consumer awareness of the label? Yes, it draws attention to it, at least, which is more than what is occurring right now.

**Gerry Youngman, ISD:** I think regarding the example of the car manufacturer is the control issue. If you never want to hear it again, you don't have to, but you at least hear it once. The control issue has had many applications in the cellular phone industry, which is an immensely popular technology.

**Mike Atkins, Energizer:** It can heighten awareness. There are many things it can't do, like eliminate all the selective listening out there. But what it can do is increase awareness about pesticides, and is that a good thing?

**Jim Wright, Law Offices:** As to whether this technology has value to Industry, I suspect that issue will be answered in the marketplace. However, if the Agency decides that this is a technology that it wants to see, the question I have is whether you believe that you have, currently, statutory authority to require this technology, if you accept the premise that this audio message is not a label by statutory authority. Do you foresee, in the future, that you would want to impose some statutory requirements? And if so, what would be your authority for doing so?

**Jim Downing, EPA:** I think currently our thinking is that this is voluntary, just like a lot of the labeling language is voluntary, yet some is prescribed. I think we would have a lot to say about how it is used. Whether or not a registrant chooses to use it would be an independent business decision on his/her part.

**Mike Atkins, Energizer:** Well, I would be really curious to see how they are addressing this, *is it a label or not* issue. It is definitely an information audio delivery system whether that is classified as a label or not.

**Jim Downing, EPA:** In one sense, it may not matter whether we are going to call it a label or call it part of advertising. FIFRA controls what you say in your advertising just like it controls what you say on your label.

**Mike Atkins, Energizer:** I question whether it is advertising or labeling. I think it is an information delivery system.

**Jim Downing, EPA:** Well, that is what the label is.

**Mike Atkins, Energizer:** Then it's labeling.

**Phyllis Flaherty, OECA, EPA:** I just wanted to comment on whether it is advertising. Under FIFRA, any claim made as part of the product's sale or distribution, meaning almost anything after the product is packaged, a very broad definition, we have jurisdiction over. We don't call it advertising when we enforce, we call it a *claims differ*. If it is labeling, it doesn't really matter what portion of FIFRA we charge, whether it's a *claims differ* or *labeling inconsistent with labeling on file with EPA*. It is a pretty minor distinction. The court does in the case, but I don't know whether this would be a major factor, unless we decide that everyone must have it, then we could mandate labeling. Labeling would be a little stronger regulatory, enforcement tool. Whether anyone had made a *false or misleading claim*, a *claims differ*, we would still have jurisdiction.

**Jim Downing, EPA:** And Phyllis, that *claims differ* would cover advertising and even claims verbally made by the salesman.

**Phyllis Flaherty, OECA, EPA:** Pretty much, that is where you get into the advertising--any claim made during sale or distribution, over the Internet, over the telephone, verbally by a salesman--the real advantage to this technology, I see, is that we have a record of what was said, instead of going into court with, "He said... She said....".

**Ben Everidge, SpaceMark:** Again, it goes back to what we were trying to accomplish with this. I don't think anyone has envisioned this to be a sales tool. I think what everyone has

envisioned this to be is how do we get people to read the label, and how do we get Industry off the hook from people who misuse their pesticide because they don't read it, can't read it, don't know how to read it, or don't understand the message. This may not remove the liability, but, at least from a business perspective, it is another attempt to try and deliver the message, "Please be careful with this product." From an advertising perspective, we would hope that it would not become a tool for advertising such as, "This is the best pesticide made of this type by this company."

**Jim Wright, Law Offices:** Let me hasten to add that I agree with everything that Phyllis just said. The FIFRA Section 12 statute, that she relied upon, says that if you make any claims inconsistent with the labeling, then that is a FIFRA violation. But, the important distinction there is that that's a tool that the Agency has to prescribe activity, not affirmatively require activity. Where you affirmatively require activity is through your authority to control the label. That is the key distinction here. Absolutely, if the company is saying something on the audio message that is contrary to the labeling, like your example, that would be a violation, and there have been enforcement cases.

So, I think it comes down to what I originally asked, apart from helping to sell the product or protecting the company against a product liability claim, I don't see a whole lot of utility to the pesticide industry to adopt this technology. If, however, the Agency believes that there may be some utility, you may lack statutory authority other than controlling the content for those voluntarily using it from making a claim inconsistent with labeling. I don't know that there is much more that the Agency can do.

**Ben Everidge, SpaceMark:** Let me make a few points about that--obviously, as an attorney, you don't see the utility in the technology, but as a businessman, I do. What would be the business advantage to me to go this extra step. Let me step back a bit, we started off this morning by saying how impressed we are that EPA is attempting to work with Industry rather than telling Industry what to do. From the very beginning, EPA has made it very clear to us that they wanted a collaborative effort. We are trying to find a mutual solution to some problems raised by various agencies, businesses, and Industry. One of the things that we would propose as the manufacturer of the talking technology, we would not want to put any label or any message on a label that has not been pre-approved by EPA. We don't want to get outside of all of those messages. Frankly, as a businessperson, it seems to me you get more for your money going through traditional advertising routes than using this particular warning label.

**Jim Wright, Law Offices:** I am intrigued by the technology, and I'm not trying to be resistive or throw up any negatives. I am really trying to understand what the regulatory framework will be for this. I think it is going to be very hard to convince the Office of Pesticide Programs that they need to approve the message, if the conclusion is that the audio message is part of labeling. Many of them feel that they are very overworked as it is. So, other than possibly applying

existing guidelines prescribing advertising or marketing claims that go beyond the labeling, and it seems to me that those are very easily translated into this field without a whole lot of additional effort by the Agency, if your hope is getting the Agency to approve these messages, then I would be very interested in hearing the Agency representatives here. But, I would be very doubtful that you are going to get that.

**Ben Everidge, SpaceMark:** I don't mind negatives being raised. That is what we have been doing for the last year is raising negatives so that we can find solutions to them. My experience with EPA is that I have looked at EPA from both sides. I spent ten years on Capitol Hill with both the House and the Senate working for a committee that had oversight of EPA. Now, I have had the opportunity to look at EPA working from the inside. I believe that EPA will provide that opportunity because their whole goal is to find a way to encourage people to read the label. I see EPA trying to step away from being big brother and saying, "This is what you must do." They are reaching out asking, "How can we accomplish this?" It seems to me that Industry and EPA are in agreement about it. How we get there, that is something we are all trying to work toward. If this technology applies great, if it doesn't, maybe there is another technology that will. The fact that this technology is designed to go with the label, it would make sense that there would be some level of review by the Agency as standard operating procedure. To date, I have not seen any indication from them that they would not provide that review because they are trying to accomplish a certain goal that I believe Industry is willing to do. Would they take the full liability of it? Probably not nor should they. I would not expect them to because this is something between Industry, EPA and SpaceMark that we are all trying to accomplish together.

**Question:** I'm Amy Brown from the University of Maryland, Cooperative Extension, Pesticide Education Program. If the objective is to really get people to read the label and follow label directions, then what it needs to say is, "This product can be dangerous when misused. It can be dangerous to human health and the environment. Read the label directions to find out how to use it properly." If this is a voluntary program, I don't see Company A putting that message on its product, while Company B is not required to put a message on its product. Company B would have a marketing advantage because the consumer would think that Company B's product is not dangerous and Company A's is because this little chip tells me it is. So, I don't think you are going to get the compliance that you think you want to get.

**Ben Everidge, SpaceMark:** I don't know that I would agree with that, to some degree yes but to some degree the messages can be tailored without an overt advertisement initiative. I would go back to the recycling issue, taking cans, newspapers, etc., things that cost companies real money to do, they did it to be environmentally friendly. It was good business. It was also good for the environment. It did cost them money, but they saw it as a necessary thing to do. I think, in some respects, you could have this. Will the entire Industry have this? No, probably not. Will a couple of key companies step forward and possibly do this. I think the possibility is

there to do that. Is there enough ways to distinguish yourself without overtly advertising? There are hundreds of different ways you could say these messages. They could be a celebrity endorsement. There could be a celebrity statement without going into the advertising to get people to read these labels. It may be an environmental activist who won't take money to do it, but who wants to get the message across, and who wants to be identified with helping to get the message across to promote this awareness. It is done every day on other products. I wouldn't necessarily rule it out saying that if it is exactly "A," then this is the only way to do it, or if it is exactly "A," no one else will do it. I think there are creative ways to do it. That is part of the challenge, and that is why, as part of a collective, we are trying to determine ways to make it work. We are trying to stick with the intention rather than get off on all these other tangents about how this product can be used.

**Amy Brown, UM Cooperative Extension:** If this group is serious about wanting to find out if it works, then I think that you need to work with educators who are used to dealing with these issues. The Cooperative Extension Service, when we run programs, we have to decide whether they are effectively changing the behavior of the people we are trying to educate. The comment that was raised before is that if we raise consciousness, then that means that we are doing a good job. *Not really.* If we raise consciousness, then we are doing a little bit. But what we really want to do is get the person to read the label and follow the directions.

**Ben Everidge, SpaceMark:** Absolutely, you want results. I would be the first to say that. We would want it done responsibly, and if it is not going to be done responsibly, then we would prefer not to be involved in the project. But we haven't seen any evidence of that. We would stick to trading cards. That is our business. This whole project is not meant to be a moneymaker for us. It is meant to be a service delivery vehicle. There are certain things that we want to do simply because it is a good thing to do. We'll make our money from trading cards. It is a big industry, and there is plenty of room for us. But, if our technology can be used for better things, like education, like charitable support, or something like it, then that is a *natural* for us.

**Jim Downing, EPA:** Another advantage for a registrant to participate is to limit liability. I don't know how strong a selling point that is, but it is certainly one more advantage.

**Mike Atkins, Energizer:** I believe that you are trying to ensure that there is some kind of quantitative, measurable way to get at the effectiveness of this technology, in making sure that it is achieving or assisting in achieving the objective.

**Amy Brown, UM Cooperative Extension:** Somebody said before that the marketplace is going to take care of that. If this isn't effective, then companies won't implement it.

**Ben Everidge, SpaceMark:** Isn't that what Steve Morrill was working on as part of the Consumer Labeling Initiative?

**Jim Downing, EPA:** Yes.

**Ben Everidge, SpaceMark:** I remember that we spent most of this year trying to figure out how to do that.

**Jim Downing, EPA:** Perhaps the CLI research could pull some of that out.

**John Impson, USDA:** Amy has basically made the points that I want to make. Put yourself in the consumer's or homeowner's place who goes into the store. They know they want to buy a product to control roaches or to spray their apple tree. I think that it would be effective, if that product would focus on one or two points in addition to reading the label. I have a real problem with "read the label." You have seen what labels look like currently. If you were to focus on one product, for example, to say, "This product cannot and should not be used indoors. It is toxic to..., please see such and such section to the label..." Then we are moving towards the objective. I think it is facetious to consider anything else as far as label information.

And two, this brings up a point, regarding focusing the priority on consumers. There are several reasons why. As far as commercial applicators and private applicators (agricultural producers)--we should continue educational programs for them, however--we are moving into an era now where more of the decisions are being made not by that private applicator or agricultural producer, but by his agricultural consultant. It is my firm belief that consulting will continue to grow like it has in the last twenty years. We are seeing it in the Midwest too. There is more use of pesticides by custom applicators than by agricultural producers. The agricultural producer is no longer making the pesticide decision. Therefore, let's focus this on the homeowner to get that good, basic education.

**Mike Kelley, Great Lakes Chemical Corporation:** The point was made that there was a marketing advantage in the label. I don't want to see that glossed over too lightly. I see, within my own corporation, fights over whether we are going to use a color label, whether the label really adds value to the product or whether it sells the product. And if you are adding cost, you are also facing the potential that there is another product that doesn't have this technology on it such that not only are you at a cost disadvantage but also there is a hidden implication that the other product doesn't have the problem. In a voluntary world, that is a very real problem.

**Amy Brown, UM Cooperative Extension:** That is the point I was trying to make.

**Mike Kelley, Great Lakes Chemical Corporation:** You made it very well. I was afraid it was getting lost.



**Jim Jones, Moderator:** I think one of the things we can do is test that theory through the Consumer Labeling Initiative because we are doing interviews with consumers. We could run a couple of tests, and we can see if we have greater comprehension and greater desirability for this technology with the label. One that has ease of communication to me has desirability, even if it's giving me a message that I'm not thrilled to hear. That is testable, and we do have a mechanism to test that theory. So, we need to look into doing that.

**Jim Downing, EPA:** Again, the novelty and the attractiveness may get the consumer's attention resulting in the desired behavior change which is to read and follow the label.

**Question:** I am Bonnie Poli of the USDA. I manage the pesticide record keeping program. I would like to emphasize what John Impson has already said. We are seeing a trend that agricultural producers are moving away from applying pesticides and depending upon commercial applicators or agricultural consultants for their pesticide application. Also, if the message is always the same, you listen to it once, but the next time, you may bypass it. I think before there is an investment in dollars, I would urge you to focus on a particular group, like the homeowner, and do some good pilot tests to see how this affects the consumer.

**Ben Everidge, SpaceMark:** One of the points I'd like to continue to emphasize is making the player is costly; changing the message is not. It seems to me that if there is going to be testing that it needs to occur all the way through this because the technology will continue to evolve. The better that the technology is applied the more easily we will reach our objective. I would hope that everyone believes that we should continue to test, change, and test some more, as the process continues to evolve. In that way, it becomes a win-win-win for everyone. For example, the \$2.00 per unit chip couldn't be used on the homeowner product right now, but in a year or two, the technology would continue to evolve, the price will continue to drop, and it will be possible sometime in the future. And if the message changes, people will continue to listen to it, but if it doesn't change then people will continue to ignore it.

**Robert Denny, ACRC:** Regarding consumer products for the pilot test, they are the hardest to retrieve and most expensive from a recycling point of view. There is already an infrastructure set up for the commercial and agricultural products. Regarding consumer products, when you start talking about costs, I suspect that the costs of retrieval is much, much higher than the costs of manufacturing and programming at this time. So, we need to think about all of these factors.

**Sonia White, BASF Corporation:** It seems that what I'm hearing more and more is that what we really need is consumer education in how to apply a pesticide. As Laura said this morning, most people don't even know they are applying a pesticide when they are spraying that foam cleaner in their bathtub. What about using a public service message. The crash dummies get everyone's attention. What about, instead of investing a lot of money in these chips, using a series of public service announcements (PSA's) that change every six months.

**Jim Downing, EPA:** That is actually one of the things that came out of the qualitative research we did with the CLI. There is going to be a Task Force put together to work with Industry and others to do it. Sure, I think that public service messages can be a plus. Consumers get all sorts of messages all the time. We are barraged by all kinds of messages constantly. But, certainly the public service ads can go along way. One of the key components will be identifying the risk, stating the *why*, has got to be thoroughly communicated first in order to get the consumer's attention.

**Ben Everidge, SpaceMark:** Let me also address the PSA question. If you could get one to work, like the crash dummies, it might be very effective. Yes, it would be more cost effective. My experience with PSA's is that (1) you don't control the content, and (2) you don't control the frequency of the message. That is the biggest problem, and you may run into that here. If you don't advertise as an Industry, then it seems to me that it is going to be a lot more expensive than doing some type of label technology. Maybe the chip is not the answer. Maybe there is another technology out there. I know EPA spent an awful lot of time trying to identify it, whether it is there or not, or whether there is some alternative, I don't know. But the problems with PSA's have existed for a long time, and from what I've been hearing, it is getting worse, not better. This goes back to the initial question as to who takes the leadership role in educating the consumer? We would never try to be a leader on it, but we would love to assist companies who are trying to educate the consumer.

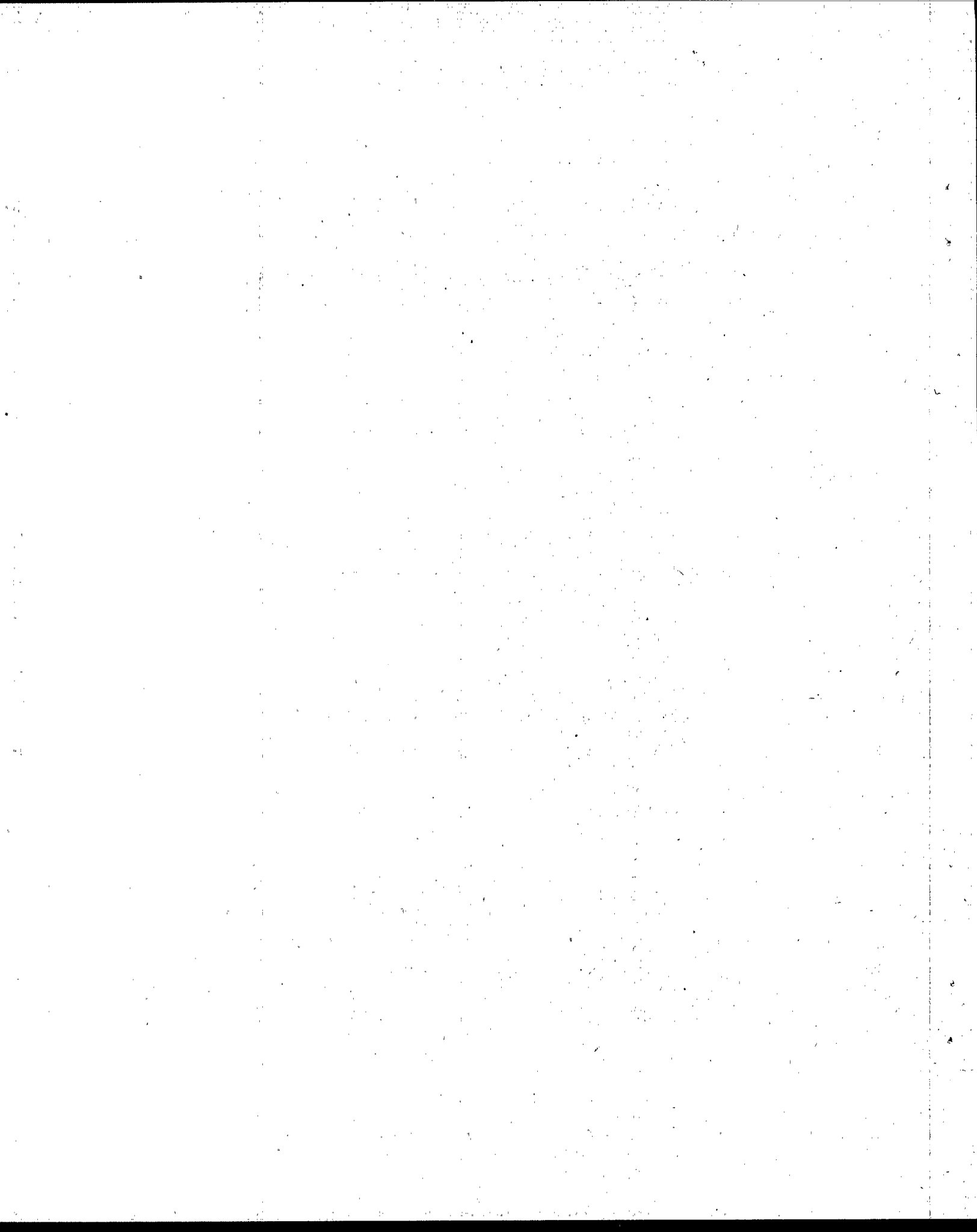
**Robert Denny, ACRC:** I didn't have time to go into everything that I would like to have said this morning, and I saw lots of blank stares when I got off into this topic. So, I think I was probably stepping on a few toes. But, in my opinion, and it's only my opinion and not my client's, the pesticide label today has a number of different customers. The customers are the enforcement officials; mixers, loaders and applicators; land owners; consultants; custom applicators; and new customers such as the solid waste facilities who manage the recycling. There are many different customers. My observation is that the current labeling system is only serving one customer well, and that's enforcement. All of the rest are deficient in their communication. I feel that is the root of the problem. We are scurrying around it and trying to put a fix on the end with technology. Now, I want you to understand that I would probably benefit, as a recycling consultant, if this concept was implemented. So I'm doing something against what would be financially beneficial to me, but I feel that I needed to say that.

**Phyllis Flaherty, OECA, EPA:** I wanted to make one final comment about a voluntary versus a mandatory program. When we've talked about this in terms of enforcement and whether or not it's labeling, I was giving our preliminary enforcement view. We are still looking at the issue, but, I think, I don't want to leave anyone with the false impression that we could never require this technology on the label because I think that we could. EPA's Office of General Counsel is looking at whether we could require it, at anytime, along with other regulatory restrictions or as a condition of registration. I think that there are mechanisms we could use.

So, I don't want to mislead anyone to say that we could never require it.

I think these are the points worth discussing: Would people do it on their own? Would it be worthwhile? Would it be voluntarily? Would it be a supplemental and/or an environmental expenditure for those companies that are facing penalties? In that case, there might be an advantage to having the technology to reduce misuse of a pesticide product because misuse costs the company in other ways. I don't think it affirmatively reduces this liability, but certainly, if they can get more users to follow the label, they're going to have less people complaining about the product.

**Jim Jones, Moderator:** I thank the panel and all of you for your questions. I think we got a lot of good questions, input, and food for thought that I know we'll be taking back as we deliberate on this issue.



## Potential Pesticide Policy and Feasibility Issues

**Jim Downing, EPA:** Thanks, Jim. That was a good job, and the panel--we got a lot of ground covered. In fact, I suspect that some of the policy and feasibility issues we've already touched on, but that's okay. Maybe we'll be able to explore some of those points.

I just thought I'd make a quick attempt to wrap up or summarize what we've discussed. I first heard that the technology is basically ready. The cost factors are getting into the fields now where it can be applicable to this Industry, as well as probably some others, and there is at least a potential educational use. The remaining question is about the psychology of using a talking label. However, it can enhance the attention to the label. Certainly, we would want to work with educators, particularly extension folks, when trying to capture the aspects of the pesticide label to educate consumers. It should be a voluntary use, at this point. The law requires that the audio part must be consistent with the label. Implementing this technology needs to be a collaborative effort. There are several ideas for potential pilots, and lots of other ideas have been suggested on how to proceed. The talking label needs to more than draw attention to it, it needs to change behavior. Pilot testing will be good, and probably continuous testing will be needed as we proceed. Rob's points were about the difficulty of recycling consumer products. From a recycling standpoint, implementing this technology is probably a problem. Does anyone else have a comment that he or she wants to make to the summary? Did I miss anything? Kevin?

**Kevin Cannon, Monsanto:** I'd like to say one thing. We can't overlook the use of this as a marketing and merchandising tool. Now, I know that you probably want to shoot me for saying this. We can't possibly put this on a label without gaining some kind of lift in the area of sales. I mean this is why we exist. Now, we want people to use the products correctly. We want them used according to label instructions, but at the same time, we want them to use them. If we have a statement, *No sales tool for advertising*, I can assure you that if that statement was taken and blocked off and put on the table, then industry wouldn't accept it at all. We are in the business to make money. Let's not kid ourselves, okay. So we've got to figure out a way in which everybody wins, and I think, from a merchandising, marketing standpoint, if you can produce a message that attracts a consumer's attention and, at the same time, provide them with valuable information on how to use the product properly, it's a win-win. I just want to make sure that this idea of...(interrupted by unidentified man)

**Unidentified man:** That's a marketing issue as opposed to an advertising issue. I would agree with you on that. It's the blatant statements that we are trying to avoid that says, "This is the best product because we manufacture it."

**Kevin Cannon, Monsanto:** It's not a question. It's one-hundred percent. We have plenty of evidence. We have talked to consumers, as I mentioned earlier. We talk to them everyday on the phone. We have forty-thousand calls a month on our products. We meet with them regularly before we launch products. Confusion and complexity are the key barriers to trial and usage. We want people to try to use our products. They don't because they don't understand them. We have plenty of data that shows forty-percent of the people that approach a store with a need to buy something walk away without a product in their hands not because they consider them dangerous or they're afraid of them, but because they just don't understand them. They just can't figure out what kind of weed that they have, what kind of bug that they have, etc. So, if you can tell them, very quickly and succinctly, that this product does such and such, it can be mixed at this rate, and you should read the label thoroughly, then you have accomplished the number one task, the goal of getting them to take the product off the shelf.

**Jim Downing, EPA:** Good point. So maybe that really ought to be rephrased, "this is not to be used merely as an a marketing ploy," or something like that.

**Terry Telzrow, Energizer:** I agree with Kevin thoroughly, and the thing that I was thinking about as I was listening is once one company does it, it becomes a defacto regulation because the other company that doesn't have it gets sued for product liability. The lawyer is going to say, "But, for a measly dollar you could have put this speaking label on, and it could have protected my client."

**Kevin Cannon, Monsanto:** It appears that you have a marketing tool. So let's not differentiate. You are showing some kind of gain. Everyone is going to follow it. It's a trend. It's a marketing tool.

**Mike Atkins, Energizer:** But we've identified the flip side. Terry identified that side. Someone else identified the flip side where we don't want the product stating that because the other one does. So you are getting both sides of the coin here.

**John Impson, USDA:** If I may have a couple of minutes. I led off my questions earlier asking who is going to take the lead on consumer education of pesticides. Let me assure you that I'm with USDA, and as such, I administer the programs that Amy Brown described, a while ago, at the Extension Service Land Grant University in Maryland. We are very serious and very concerned about pesticide usage and especially some of the misuses that have occurred in the last several years. One example is the incident with methyl parathion in Mississippi and a couple of other states this year. We need a basic pesticide education program, and if we are successful in getting funds in the USDA budget this year, it has been proposed to go into the administration budget. It has to go before Congress in a very few, short months. We have the

facilities. We have the avenues. We want to conduct the pesticide education programs for consumers or, at least, to participate. Certainly, the industry conducts educational programs now. Some of the other organizations do also.

We are very serious on how it impacts agricultural production and production of food and fiber in this country. We need that basic educational program to make sure that consumers understand why they should not be using products such as the methyl parathion indoors because of the potential harm to individuals where it was used. We also look at the effects that this could possibly have on the agricultural industry and production agriculture. We may lose methyl parathion, and it's important in a couple of our commodity production programs, or it may be further restricted to those agricultural producers. We don't need this. The agricultural industry, the user industry, and certainly the consumers need that basic educational program. Jim, I want to offer our Agency through the USDA and the Land Grant whatever we can do to work with EPA.

