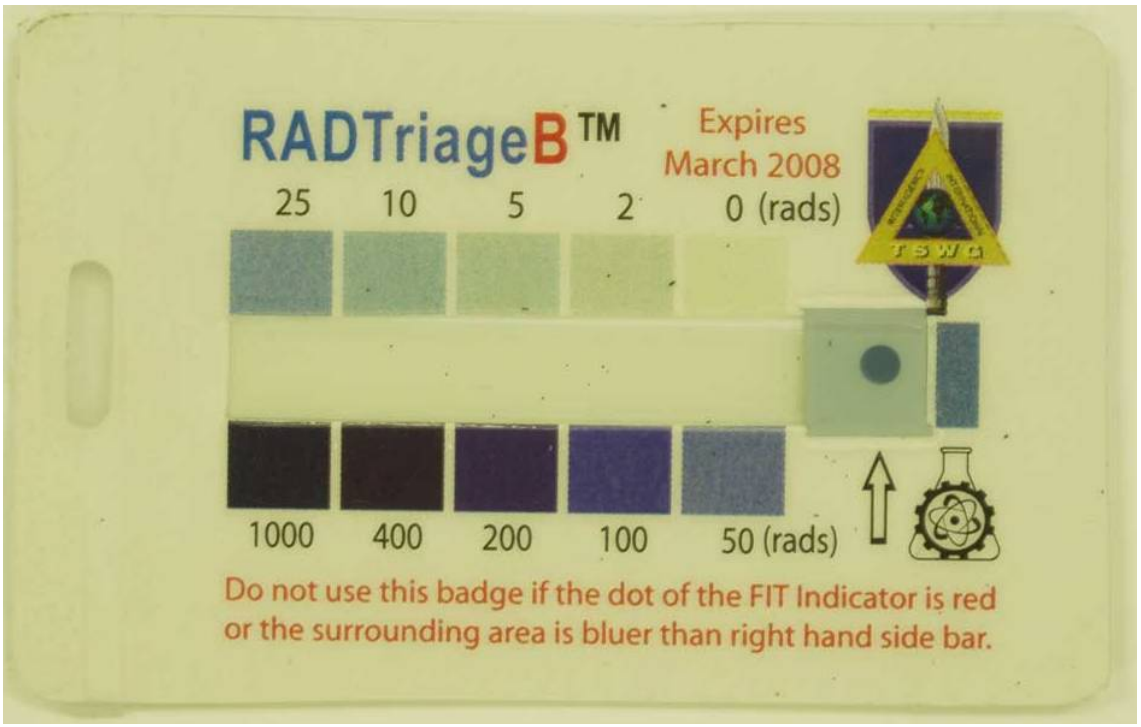
TIRANGA IN NEW JERSEY
April 2007

A Novel technology of an Indian innovator for homeland security on the Capitol Hill

By Dr. Amrut Hazari

Let me ask our readers, how many people you know who are scientists? You would say many. How many of them are recipient of multi-million dollar grants, recognized by awards such as excellence in technology, best in innovation, invited by a Congressional Subcommittee to testify on one of his innovations and his product displayed exclusively for our congressmen and senators on the Capitol Hill? Most probably you would say, none. Well, I know one such person.



SIRAD a small, rugged, reliable, and affordable casualty radiation dosimeter for use by public safety and military personnel to measure gamma/X-ray exposure.

This fellow is a chemist, has a Ph.D. in physics (crystallization of Plastics), done post doctorate work in physics in England, is doing high tech innovation where you have to be one of the bests to receive multi-million dollar research grants at national level competition to develop new products from chemistry (synthesis of new compounds), to physics (radiation monitoring), to metallurgy (metallization of plastics) to biology (synthetic blood). He has received at least a million dollar grant on each of the above. You know, he is one of us and surprisingly he is a Gujarati and a Patel. He writes poems and assays in English, Hindi and Gujarati. He is one unique and rare person. He is Dr. Gordhan Patel, President of JP Laboratories in Middlesex, NJ.



Dr. Patel displaying RADTriageB at the Tech Demo in Cannon House

Recently, one of his innovative products, a credit card sized radiation dosimeter, actually it is not simply a product but it is a new technology, was displayed on the Capitol Hill, Washington DC exclusively for eyes of our Senators, Congressmen and their staff.

On March 16, the Department of Homeland Security, Science and Technology Directorate and TSWG (Technical Support Working Group) organized a Tech Demo to display wide range of capabilities of CBRNC (Chemical, Biological, Radiological and Nuclear Countermeasures) in Cannon House (an office building for our Congressmen), next to the Capitol Building, Washington, DC exclusively for our legislators. The Honorary Sponsors of the event were the Honorable Bennie Thompson, Chairman and the Honorable Peter King, Ranking Member, House Committee on Homeland Security. Tech Demos for our legislators are rarely organized. Only about 25 companies who have developed products for homeland security were invited to display their products. Most of the products were *from* large corporations, such as General Electric and General dynamics. The product of JP labs called SIRAD for **S**elf-indicating **I**nstant **R**adiation **A**lert **D**osimeter, was the smallest, least expensive and simplest to use and still equally valuable for homeland security.

SIRAD is. a small, rugged, reliable, and affordable casualty radiation dosimeter for use by public safety and military personnel to measure gamma/X-ray exposure from a radiological or nuclear terrorist attack such as a dirty bomb, to support personal protection and medical triage.

The central sensing strip of SIRADs such as RADTriageB changes color instantly and permanently

upon exposure to doses of radiation from a radiological or nuclear terrorist attack that can cause acute radiation sickness. Dose is determined by matching the color of the sensing strip with adjacent color keys. In addition to providing personal peace of mind, the sensor provides critical information to emergency room personnel for treatment decisions. The RADTriageB can be stored for years in the freezer ready for issue and use.

SIRADs are history making products developed by Dr. Patel. They are user friendly, inexpensive, lightweight, wearable, instant, self-indicating, always ready without a power source, shelf life of at least one year and practically non-destructible dosimeter for monitoring harmful high dose (1-1,000 rads) needed, but did not exist. This was a technological gap in radiation dosimetry. Dr. Patel's SIRADs fill that gap.

Dr. Patel lives a simple life and a perfect example of 'Simple living and high thinking'

What is SIRAD and how it helps in combating terrorism:?

People and governments around the world are worried about terrorist attacks using dirty bombs. When detonated, such a device could cause wide spread panic, massive disruption and render the surrounding area uninhabitable for decades. Property damage could be in billions, even in trillions and make millions worried for the rest of their lives about their radiation exposure. Problem with radiations is that they can't be seen, smelled or felt and their effect (e.g., cancer) can appear after years. Hence, affected people will be worried and want to know their radiation exposure immediately, *'Did I receive a lethal exposure to ionizing radiation, will I be OK or will I develop cancer in future'.* First responders (police, firefighters, medical personnel, etc.) not only want to know their exposure but need to quickly assess radiation exposure of the affected people to ensure that medical treatment is first provided to those who need it the most. SIRAD (self-Indicating Instant Radiation Alert Dosimeter) answers those questions quickly and cheaply. It can take days and cost five times as much to get that information by other methods and devices, such as TLD (Thermo Luminescence Dosimeter).

After the event of the 9/11, our Government solicited proposals for combating terrorism and homeland security. The responsibility was assigned to a little known agency called TSWG (Technical Support Working group). JP Labs' SIRAD technology was one of the early ones to get about a million dollars funding for development of SIRAD technology. http://www.jplabs.com

Radiation Detectors and Dosimeters:

A variety of radiation detectors, such as Geiger counter and silicone-diode, and dosimeters, such as quartz fiber electrometer, X-ray film and TLD (Thermo Luminescence Dosimeter) are widely used for detecting and monitoring radiation. However, they need to be sent back to a service provider for reading exposure which takes days and costs $ 100-$300/year/person.

***SIRAD* for homeland security:**

The main objective of the dirty bomb is to create panic, make people worry through out their lives and a massive disruption of our lives. SIRAD will reduce the panic and give peace of mind to the users. SIRAI has all desired properties, such as affordability, easy to read exposure,

always active (needs no battery), long shelf-life, selective response to X-ray and monitors harmful high dose (1-1,000 rads).

Minimize Worry and Panic with SIRAD:

The best way to minimize the panic and worry of the population affected by a dirty bomb or any radiological accident is to (1) educate public about radiation and its effects, (2) provide inexpensive radiation dosimeters, such as SIRAD capable of monitoring harmful high dose (1-1,000 rads) before an attack. If they know that they have received very low dose (e.g., below 1 rad), it is less likely widespread panic would occur (because vast majority would get below 1 rad).

SIRADs will also be extremely beneficial to those who work with radiation on a daily basis as well as those who live near nuclear power plants and need to constantly measure their radiation exposure.

Technological Excellence is recognized:

Amongst the others, SIRAD received "Frost and Sullivan Excellence in Technology" award in 2004 and is a recipient of "R&D-100" award ("The Oscars of Invention"- ***The*** *Chicago Tribune) in* 2005. Dr. Gordhan Patel has testified before the Congressional Subcommittee on 'National Security, Emerging Threats and International Relations' on SIRAD Technology.

Dr. Amrut Hazari, during his meeting, asked few questions of interest.

Q. Who should buy your Dosimeter?
A. The potential of one getting exposed to radiation is high if a radiological incidence such as dirty bomb, nuclear bomb or if you live near a nuclear power plan and an accident occurs. In such an event you would know your exposure rather than assuming you are or you are not exposed to radiation and how much.

Q. How long you been working on this device?
A. I started working on effect of radiation in 1970 when I was at Physics Department of University of Bristol, England and on diacetylenes, the materials used to make the sensors of SIRAD since 1974. Development of this dosimeter started with almost a million dollar funding from the US Navy in *1995* and another million dollar from TSWG (funded by DoD, DoJ, DoS and DHS).

Q. How do you feel being the only Indian company on the Tech Demo?
A. It is a matter of pride.

Q. Describe your business. How risky is your business?
A. Probably, the most risky business an individual can get into. It takes multi-million dollars and years of efforts by many scientists to develop and introduce a new product into the market. Hence, Research and development (R&D) is a business of multi-billion dollars companies. I invest millions of dollars to develop a product like SIRAD and years of dedicated efforts to

develop them hoping it will make money for me. This is known for a research worker or innovator. I am in an uncommon and unusual trade/business where failing 99.99% of the times is a norm. However, I learn from my 99.99% failures and counts on 0.01% for the success. In the past 20 years I have developed 20 new products (which never existed before). I licensed half of them and I am manufacturing and marketing SIRAD with help from my son, Paresh and daughter, Jessica.

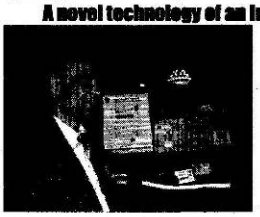
Q. You wanted to develop synthetic blood. Our Government gave you almost a million dollar grant to develop it. We need synthetic blood more than the dosimeter. Why did you stop working on it?
A. It required tens of million of dollars and may take ten years. Unfortunately, it is a compromise. I neither had money (nor I could raise that kind of capital) nor the time (I am nearing 70 years).

Q. What motivates you to all this?
A. It was a dream of my parents which became later on my own that I should do something for the society, be something/someone if I can be. It is a pride for me, my family, village (Manund in Gujarat) and our society (all Indians).

Q. Why do you work so hard at age of 65+?
A. That is what I am good at and it gives me personal satisfaction that I made a contribution to society.

Tiranga wishes this young man of 65+ years a very active and bright future.
Tiranga in New Jersey, April 2007.

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