

704603

● *The Accident—Physicists' Perspectives*

THE GOIÂNIA ACCIDENT: BEHIND THE SCENES

J. L. Lipsztein, P. G. Cunha and C. A. N. Oliveira

Instituto de Radioproteção e Dosimetria/CNEN, Av. das Americas Km 11.5,  
Rio de Janeiro, CEP 22602, Brazil

THIS commentary aims at registering some of the hardships and anxiety that we scientists faced during the months following the Goiânia accident. We were faced with a situation that we were never taught how to handle. This special issue of *Health Physics* contains articles about the technical views, experiences, and conclusions from the Goiânia accident. These comments, however, will not concentrate on the technical points, which we were very well prepared to handle, but on our greatest difficulty, which was working in an uncontrolled environment, face-to-face with people.

Our comments may not follow a logical or chronological pattern, but will give the reader an idea of what it was like to work on the Goiânia accident. Our daily routine was drastically changed. Our then current works, our priority studies, were dropped overnight and all our attention was focused on the accident. Some of us had to leave our families for up to 3 mo and work nights and weekends, in an unknown ambience, under pressure from the population, reporters, and politicians.

Goiânia is 1348 km from Rio de Janeiro and 919 km from São Paulo. There are no direct flights from Goiânia to Rio, where most resources are located. In Goiânia, everything had to be improvised. Instead of finding expected auxiliary help, the fear of contamination among the general populace required that we technicians work alone, for no one wanted to risk helping us. Technicians had to do plumbing, construction work, house painting, demolition work, scrubbing, and other types of manual labors we were not accustomed to. The heat was intense and humidity was high, making it almost unbearable to work with radiation protection outfits. The support team in Rio worked nights and weekends to analyze data as quickly as possible in order to synchronize actions with results. During the first month, samples were collected in Goiânia, sent to Rio to be analyzed, and results shipped back in useful time. No fax machine or computer networks were available.

The individuals involved in the accident had a different social background than we were accustomed to. We were stressed by having to violate their privacy, a privacy we were not prepared to take part in, but that was imposed on us as we decontaminated their households and gave them treatment.

The most seriously contaminated patients were sent to the Naval Hospital in Rio, while the others stayed in Goiânia General Hospital. In Rio, we had a series of problems with the hospital and the patients. While most of the patients were cooperative, some insisted on hindering our efforts as in the case where one patient decided to urinate in all the urine samples to confuse the technicians. The hospital staff was also not prepared to deal with such an emergency. Appropriate urine and feces collection containers that we sent to the hospital were lost, and many times samples arrived in plastic bags, making it necessary for us to handle them, which besides being nauseating, required extra precautions against radiation exposure. In Goiânia, work was also made more difficult by some patients' refusal to cooperate.

There was a communication gap between us and the general populace. We tried to produce a newspaper explaining the exact consequences of  $^{137}\text{Cs}$  exposure, but we were unsuccessful in its impact. The press was not prepared to deal with the subject, and we were not prepared to deal with the press. Instead of helping us by explaining exactly what was happening, and printing integral interviews with scientists working on the project, sometimes the press was more interested in selling newspapers. This irresponsible yellow journalism stirred the fear in the population to such a point that some people who flew over Goiânia wanted to be examined in the whole-body counter.

In Goiânia, people who were far from the contamination zone insisted on being examined by our technicians. We monitored more than 120,000 people, over 10% of the population of Goiânia. People thought that radiation contamination was a highly contagious disease. Many hotels outside the city, as well as air and bus companies, would ask for a Radiological Cleanliness Certificate issued by us in order to accept Goiânians. Sales from Goiânian products plummeted 30% in relation to those of the year before. All this was unnecessary because the area affected was restricted to one square kilometer, and not more than 80 people, all related, were involved. This hysteria instigated by the media was very expensive for the government and extremely painful to those involved.

At a certain point, we had to face the fact that political decisions overruled technical opinions. An example is that

1005101

COLLECTION MARKY FILFS FOLDER BRASIL 87 GOIANIA

REPOSITORY DDE-FORRESTAL BOX NO. 3 of 6

CESIUM-137

of the radiological waste storage site. Extensive political discussions took place. Until the site was chosen, decontamination could not start. Radioactive debris was carried by rain, and people were questioning us about why we were not doing any work. When the location was finally agreed upon, it was deemed only temporary so that no permanent building was allowed and waste drums and containers were covered with thick plastic.

Perhaps our greatest difficulty was seeing that our decisions could not be purely and "coldly" technical. In Goiânia for example, we had to decide at what contamination level would be necessary to relocate families. No hotels or other families would rent them rooms, so all people had to stay in public housing that was extremely uncomfortable. When the contamination level was low, people were permitted to stay and only highly contaminated household items were removed, such as a carpet or a table. On the other hand, it was very difficult to explain that it was necessary to decontaminate a house in which we allowed the family to stay. When we started decontamination, everyone wanted their house completely "cesium-free." How were we to explain ICRP limits or acceptable background radiation? The more we cleaned, the more they were distressed, for they had eaten there, slept there, and were terrified of what effect that would have on them.

In Rio, a hospitalized 6-y-old girl was extremely contaminated. We knew technically that she should be isolated in order to not expose anyone else, but we also knew the probability of her death was high. Her father was allowed to stay with her at all times, and she received myr-

iads of toys every day, toys that would become radioactive waste.

Right after the accident, technicians were treated with distrust. People tested us by making us drink coffee and water from houses that we assured were "clean." As time passed, a bond was created between technicians and families involved. Many families would "adopt" a technician and would believe only his or her word. Even among the remainder of the population in Goiânia, fear and distrust gave way to respect, and working for the National Nuclear Energy Commission (CNEN) became synonymous with the words hardworking and knowledgeable.

After the accident was taken care of, it was time for life to resume its usual pace. There would be no more stardom, no more pampering, no more TV appearances, and no more visiting TV stars. It was difficult for many of the exposed persons to go back to their regular lives after their routine had been broken for such a long time.

Today, 3 y after the accident, we find that we learned much more than is expressed in the scientific papers we published. Our most important discovery was neither the behavior of  $^{137}\text{Cs}$  in the human organism nor the optimum dose of Prussian Blue to treat patients. We matured not only as scientists, but especially as human beings. We experienced a reality different from that of our well-equipped laboratories: There are simulations that the computer cannot solve and situations that no one can predict.

*Acknowledgment*—The authors thank Mr. Gustavo Lipsztein for his help in writing this article.

1005102