Chapter Four

Zones

Volodya had to go see his wife and son for the weekend. They live seventy kilometers from Kiev. I'm to stay in his apartment until he gets back, then move back to the Environmental Protection Society's hotel. His friend (who has the same name; I think of him as Volodya-II) takes responsibility for me. I'd say he speaks about twice as many words in English as Volodya-I. That puts him up around the range of about a couple dozen. Also his car is newer and closer to comfortable.

He picks me up at Volodya's house at 1:00 to meet Ljudmula somewhere at 2:00. But, as it turns out, there was a delay in plans. We arrive at an unidentifiable stretch of sidewalk fifteen minutes early. So we sit in the car looking at the drizzle and snow until a big guy in a flattened fedora shows up with a limp flower. He hangs around on the sidewalk for a quarter of an hour, then finally comes over and asks, in crisp, perfect, forced English, if I'm the guy he's looking for. It turns out I am. Well, Lujdmula's going to be an hour late. Well, okay, now what? Well, now nothing. We wait. I sit with the door half opened while this poor guy leans vaguely down, afraid to pull away, afraid to get in. I warn him that his tan trench coat is up against the muddy car. He says that's not a problem. But after ten or fifteen minutes he says we should go to so-n-

so's house and Ljudmula will meet us there. He will wait for her. He hands me the limp zinnia and says, "Please, give this to the hostess. Hostess, yes? Hostess."

So the Volodya-II takes me and the flower to a nearby address and up the rattletrap elevator to the tight clean apartment of a chemist named Alec who is on two committees that are measuring radioactivity all over Ukraine, figuring out which towns go in which zones. Zone 1, which is anywhere having more radiation than Zone 2, was supposedly evacuated in 1986. Zone 2 ofers 3 curies of strontium, 25 of cesium and 0.1 of plutonium per square kilometer. Zone 3 has 0.15 curies of strontium, 5 of cesium and 0.1 of plutonium, with dosage exceeding 100 millirem per year. Zone 4 has 0.02 curies of strontium, 1 of cesium, and 0.01 of plutonium per square kilometer, with dosage not exceeding 100 millirem per year.

Whether these numbers are correctly translated I will never know. The exceptional power of Ljudmula's right brain has left her bereft on the other side - either that or the other way around. I mean she can't say, repeat, translate any number besides a simple integer. Decimals blow her away. We even get into powers of numbers. "Iodine-131 isotope" comes out as "131 isotopes of iodine." It's odd that she's this way. Her English is amazingly perfect in all other ways, though some of the atomic terms - ion, isotope, neutron and such - are new to her. She feels guilty about this and also about the fact that she gets emotionally involved in what

she's hearing. She had no idea of the extent of the horror, the depth of the complications, the forces of evil at play in the radiation.

People are still being moved out of Zone 2, and those of Zone 3 have the right to be relocated. Those in Zone 4 have certain economic privileges. No agricultural production is allowed in Zones 2 and 3. Food is brought in to people still living there.

But of course things don't work out that way. People still live in all the zones, including the Prohibited Zone within 30 kilometers of the Chernobyl plant. In the absence of anything else to eat, crops are grown and consumed in all zones. Wood cook-fires send more radionuclides into the air. The Ukrainian government says that Kiev is not contaminated. Alec says that all of Kiev qualifies as Zone 4. Some parts of Kiev even qualify as Zone 3.

The trouble is, people living a Zone 4 area are entitled to certain benefits, including exemption from income taxation. If Kiev is in Zone 4, the government of Ukraine, already all but broke, will lose a major source of revenue.

Conclusion: Kiev is not in Zone 4. It's as clean as can be. It's just a matter of ignoring the numbers.

He explains how bathrooms pick up more radiation because radioactive water from the Dneiper per runs through the pipes, which pick it up and

hold it. He shows me a little dosimeter. For 110 rubles I could buy one in any store, he says. Then I'll always know for sure. We turn it on. It says 0.13 miliroentgens. 0.10 would be normal. Outdoors, he says, it would be 0.14. This is called background radiation. It's always there.

Ljudmula and I go to a press conference back at the International Conference. No good news there. Genetic abnormalities are up 1.8 times. Cancer is way up, especially in children. But most of what I hear is the hogwash of people with political aspirations. When Elena arrives, we leave to go see a city deputy named Skripka.

Skripka's a former plant physiologist. He hasn't got any good news either. He's got all kinds of data and it looks organized, comprehensive, and accurate. I trust it because it's coming from a former plant physiologist who is wearing a suit and tie that are up to Western snuff. His data is on computer print-out.

Skripka's thesis is that there are more victims of Chernobyl than officially known. Some 30,000 liquidators and evacuees have registered as victims, but Skripka believes there are 20,000 more who haven't bothered. But even those numbers are low, he says. Everyone in Kiev - 2.6 million people - is a victim because radiation is much higher than officially acknowledged. His data falls in line with that of Alec the chemist. Though Skripka cannot verify it, some scientists he knows went to the Soviet Union's nuclear testing ground and took radiation readings at ground zero. The readings were lower than at any point in Kiev.

By Skripka's estimate, in the days following the accident, everyone in Kiev received from three to five rem from internal radiation. That's equivalent to the annual dose allowed nuclear workers in the United States (and fifty times the allowable dose for nuclear workes in the Department of Energy). This radiation was the alpha and beta particles emitted from radionuclides, the radiation that is relatively harmless as long as it's outside the body. Beta particles will barely penetrate human skin, and alpha particles will bounce off a piece of paper. They aren't a big problem unless they get inside your corporeal fortress. But if you inhale or eat them, the body may accept them as nutrients. Strontium-90, for example, looks a lot like calcium - same number of electrons in its outer shell - so bones readily latch onto it. The strontium makes itself at home and begins radiating the local marrow.

Similarly, iodine-131 is quite like regular iodine, so it tends to accumulate in the thyroid. (The purpose of iodine pills as a safeguard against radiation is to fill the thyroid so the radioactive iodine just passes out of the body as an unneeded nutrient.) Cesium is versatile enough to find many homes in the human organism. Once lodged in the body, these radionuclides keep emitting radiation, attacking the thyroid, the marrow, the blood that happens to pass by. It might give you thyroid cancer, leukemia, or any of various blood diseases. An invisible speck of plutonium in your lung is enough to give you lung cancer.

Kiev was also bombarded by gamma waves, which are more dangerous but shorter lived. They zap right through the human body, doing some damage on the way but not lingering to continue the attack. Today, scientists cannot determine how many rem of gamma waves people suffered six years ago.

Skripka gained access to some KGB files and found that the Soviet government knew a lot more than it let on. Children under the age of 1 had an average of .5 rem in their thyroids - five times the current annual dose allowed to hit non-nuclear workes in the United States. Pregnant women and their unborn were known to have equal radiation levels in their blood. Breast milk was contaminated.

Radiation wasn't the only poison blown out of the Chernobyl reactor. The atomic chaos of the meltdown created virtually every possible element and isotope, not to mention bizarre molecules. Some of the isotopes lived for mere nanoseconds; some will be around for millennia. The lead that helicopters dropped into the flaming crater evaporated and blew across the countryside. It finds its way into people via grass that cows eat. It is impossible to say how much of this lead is from gasoline, how much from Chernobyl, but whatever the source, it's all over the place.

A special well dug in the Prohibited Zone brings water up from 30 meters. Lately it's been showing radiation levels of ten to the negative ten curies per liter. If it were a byproduct in a nuclear laboratory, you'd

have to take special measures to dispose of it. Dropping it into a well would not be appropriate. The Dneiper River, which runs through the center of Kiev, once had similar levels of strontium, but it has dropped to 10 to the negative 12 curies - acceptable though still above the ideal of zero.

So it's no wonder blood donor data shows that 80 percent of donors have abnormal levels of such things as white and red blood cells and immune proteins. It explains why 30 percent of children can't receive a vaccination because they come down with the disease the vaccination was supposed to prevent.

Skripka has data on increases in health problems. Among official adult victims, the death rate has increased 400 percent since 1987. Death by cancer is up 300 percent. Breast cancer is up 26 percent. General disease, up 500 percent. Problems in thyroids and other glands, up 400 percent. Respiratory disease, excluding cancer and tuberculosis, up 2,000 percent. Pneumonia, up 220 percent in adults, 260 percent in children. Allergy problems, up 41 percent in adults, 80 percent in children. Incidence of brain cancer, up 350 percent from 1988 to 1991. Genetic aberration, 10-13 times higher in contaminated areas.

This information flies in the face of the conclusion of the United Nations International Atomic Energy Agency (IAEA). The IAEA made a supposedly comprehensive and unbiased assessment of the aftereffects of Chernobyl to see if people who have not been evacuated are suffering

consequences of radiation. (They did not examine liquidators or evacuees.) The IAEA conclusion: no problem. There is no illness, no cancer, no increase in birth defects. Even among people living in the most contaminated areas, the areas marked blood red on contamination maps, are suffering no more than they did under Stalin, Kruschev and Brezhnev.

Skripka says what the UN has done is certify the safety of nuclear war. If their report is true, he says, if 50 tons of nuclear fuel can be thrown into the atmposphere without harming anyone, why don't we dispose of nuclear waste the same way - just stack it on a pile of dynamite and blow it up?

Skripka announced a press conference where he planned to disseminate his information, which was probably the most complete and accurate available anywhere. Unfortunately, no one showed up. He suspects they were afraid to. They depend on the government for their paper and other supplies. The government of Kiev might like to have this information made public, but the government of Ukraine would not. He says he has many enemies on his committee. They don't like this information. They're bureaucrats, and it's information like this that makes heads roll.

He shows us a colorful map of topograhic-like lines that show where the cesium, plutonium and strontium lie in Kiev. Ljudmula and Elena check out the milliroentgens where they live. They're in Zone 4, which they see as somewhat of a relief. It could be worse.

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Mr. Skripka remembers the days following the explosion at Chernobyl. He first heard about it in a minor item in the newspaper on Monday, April 28, two days after the explosion. It made no mention of radiation or evacuation. But rumors were bouncing around Kiev. On April 30, he checked instruments in his laboratory. They showed very high readings. Being a scientist, he knew what they meant. He called home and ordered his wife to bring their daughter inside, to close the doors, to change clothes and leave the dirty clothes outside, to take a shower, to tell the neighbors.

The neighbors didn't believe him. It was such a beautiful spring day. The sun was out, the breeze as nice as could be. The TV showed the May Day games and parades. Girls in marching bands were prancing around in short skirts, unaware of the deadly particles showering down on them. An international bicycle race charged off through the radioactive countyside, bikers huffing and puffing through the radioactive dust.

Skripka found an old Geiger counter in his closet, a relic of his days in civil defense. Somehow he got it working. It confirmed what he feared. Everything was hot, including his daughter's beautiful hair. He and his wife cut it all off with a pair of scissors. He kept calling people to warn them, but they told him he was crazy. As he watched the world continue

as normal outside, he began to wonder if it was possible for one person to be sane and the all the rest not.

As rumors spread in the early days of May, TV programs actively denied problems. Peasants were interviewed. They said they felt as fine as ever. Scientists took readings near the power plant and found radiation levels below normal.

The news arrived in other countries first, though it tended to change fast. In some countries, it took a week to evolve from "There is no danger" to "Do not let children play outdoors." By the time the Soviet people had an idea what was happening, there were already riots in Rome and Athens. The news was especially slow coming into France, where the government was maintaining that the radiation had pretty much stopped at the border with Germany. Like green grass, it was much higher on the other side. The French Director of the Radiation Protection Agency went on record saying the highest elevations were 5-10 times normal, but by mid-May he was admitting he khad known they were 400 times normal.

On May 6, the panic began in Kiev. Desperate to leave the city, people mobbed the train stations - the worst place to be. Radioactive trains arrived pulling radioactive dust behind them. People with radioactivity in their hair and clothes were radiating each other. They would have been better off at home because the radiation levels were already decreasing.

On May 8, Hans Blix, Director General of the IAEA, held a press conference. He said that radiation levels at the perimeter of the 30-kilometer zone had been 10-15 millirem at the time of the accident but had declined to 0.15 millirem, a safe level. He did not mention that the level in Kiev, sixty miles away, was still at 0.4 millirem.

On May 12, Kiev City Hall announced that radiation had returned to normal. The definition of "normal," however, was being adjusted for the emergency situation. Instead of 0.5 rem per year, it would thenceforth be 10 rem per year. The new standard would let everyone relax because it would now take five years instead of two months to take on a dangerous dose.