

# Prof. Ted Postol: Israel's Air Defense in TOTAL COLLAPSE

**#Nima**

Hi, everybody. Today is Monday, March 23rd, 2026, and our dear friend, our brother, Prof. Ted Postol, is here with us. Welcome back, Ted.

**#Ted**

Nice to be here. Very, very nice to be here.

**#Nima**

Ted, let's start with the conflict — the war in the Middle East between the United States and Iran. Israel is part of that war. And here is Donald Trump today, talking about it, saying there's something going on, that we're negotiating all of it. It seems he's trying to manipulate the market, and he feels that this way he can influence it. But what we've heard from Iranian officials is that there have been no direct or indirect talks in the last 24 days. So now Trump is making something up. Putting all these political moves on the part of Donald Trump aside, how do you see the situation? Yesterday, we learned about two missiles hitting Al-Mona in Iraq. What can we understand about the current situation with the air defense systems, the missiles, and the dynamics of the war?

**#Ted**

Well, I think the air defense doesn't exist. I mean, it's a fiction — it's been a fiction from the beginning. Now they're talking about running out of interceptors, which I think is true. But the interceptors weren't doing a very good job to begin with. So right from the start, we really haven't seen any significant contribution from the missile defenses. Now, I want to be very circumspect. I apologize to the audience, but I have some very reliable information from Israel, and I think the situation there is, in my judgment, not very good — which, of course, is important for people to understand, because the blackouts, the Israeli information control, as far as I can tell, do nothing for the public in Israel, who are suffering just as, of course, the public in Iran is suffering greatly.

These blackouts really conceal information from people who might, by reacting, have some constructive influence on the outcome of this—on the evolution of this terrible war, this war of choice, as most people point out. And, you know, the indications haven't changed with regard to Israel, in the sense that there's no question significant damage is being done. It's not on the scale of what's happening in Tehran, but Israel is a smaller country, and disrupting it is a much less

demanding job. And of course, the objective of Tehran is to disrupt Israel as best it can, and it seems to me it's succeeding very well. I mean, the air raid sirens are going off several times a night.

People have no choice but to take shelter. This, of course, disrupts their whole family environments. In the case of some people who have shelters—though not everyone appears to have them, although I thought that was the case—I've learned differently. And so people open their shelters to neighbors. You know, people are sleeping on mats underground. Many people are homeless. They haven't been killed or injured, but they're homeless. There are many killed, many injured. Israel has a pretty good civil defense effort, which basically means taking shelter. That is fortunately saving lives, but the disruption to society is tremendous.

And that's a good effect from the point of view of the Iranian government, in terms of making the Israeli government take notice of what they're doing—of their unjust aggression toward Tehran. So, of course, as usual in war, or in many wars, the people in between—the populations of Iran and Israel—are suffering the most. Obviously, I've had no contact with Iranians, but it seems to me it's worse in Iran, although it's a bigger country and somewhat more spread out. But killing all these people for no reason at all—not to mention destroying schools and hospitals—you know, it's just unconscionable.

My concern right now hasn't been so much about the air defenses, because it's important for people to understand that these air defenses have never really functioned. It's important to understand that this is a gigantic fraud perpetrated by the U.S. government and the Israeli government on American and Israeli citizens—not to mention Europeans—who have paid enormous amounts of money for air defense systems that don't work against ballistic missiles. They do work against aircraft and drones, but that's another discussion. And of course, when they run out of interceptors, it means the most problematic threat the Israelis and others face now are the drones, because the drones are extremely accurate.

They can be programmed from thousands of kilometers away. They have the ability to look at the targets before the final homing phase, and they can essentially home in on the targets of interest. We saw that on the first day of the war, when the Iranians basically destroyed the entire base of missile defense radars in Israel. From my point of view, speaking as someone looking at it from a military perspective, that was the most important first step in a process where the Iranians are now going about destroying all the air defense radars as well. There is no air defense—without radars, you have no air defense.

You can't shoot down drones. And those drones are, from the point of view of interceptor capabilities, relatively easy to hit. But if you don't have radars to observe the incoming drones and track them, those interceptors are useless. We're now getting to a second phase where the Iranians are able to tear down the remnants of air defense—air defense being distinct from ballistic missile defense. Those air defense capabilities are critical because the drones are extraordinarily accurate. So the drones and cruise missiles will now begin to become the major inflictors of damage as things

proceed. And in Dimona, we saw what looked like a couple of ballistic missiles with significant warheads come in and do damage.

There's some nonsense about falling debris. There's no falling debris. These things came in unengaged—or if they were engaged, there's actually some evidence of that. I've been very busy trying to do analysis. My problem is, I can't follow the news and do analysis at the same time. I'm trying to identify issues that the audience should be thinking about in the future, at least. The issue I'll talk mostly about now is the potential escalation to nuclear weapon use, because to me, this is the greatest danger we now face. Iran is beginning to bring the full weight of its strike capabilities to bear on Israel and the military installations in the Persian Gulf.

This is going to cause more and more damage, and it's going to create more and more desperation in the Israeli and U.S. governments. We saw—I want to underscore, I don't take a lot of solace in this—but we saw a little bit of sense shown by Donald Trump when he stepped back from that unbelievably escalatory threat to destroy Iran's energy production system. And the Iranians basically told him what anybody could have told him—you know, his advisors, I presume, told him this—that the Iranians are in a position to destroy energy production facilities throughout the Middle East, which is apparently the threat they returned.

And it's good that somebody was listening—somebody in the White House. I presume it was the intelligence people who went to Trump, and he obviously didn't listen to them initially, but they basically said, you know, you're going to have trouble like you've never seen before if you go ahead, because the Iranians will respond. They're in a war for survival, and they're not fooling around. They've reached the point where it's clear to them—I'm not speaking for the Iranians, but as a person observing their situation—it's clear to them that they'll get no relief of any kind unless they make it clear that if you don't give them some space, they're going to bring everything down with them.

That's what they're saying, you know, in a more polite way. But that's basically what they're saying. I don't think they have a choice, myself. I mean, in their position, I would do the same. They agreed to the Joint Comprehensive Plan of Action in 2015, which was an exceptionally constraining agreement. I take that as an indication that they really weren't ever trying to—well, maybe at some point earlier they were thinking about building nuclear weapons—but there's no way they would have agreed to the Joint Comprehensive Plan of Action if they ever intended to have or wanted a nuclear weapon. Trump, of course, withdrew from the agreement, saying it was inadequate. There's no way that agreement was inadequate.

It was a tremendously constraining agreement. Tremendous. I can talk about that sometime—people are interested—but it was a tremendously constraining agreement. And really, if people had followed the terms of that agreement, and those terms included relief for Iran—economic relief for Iran—which was not followed through as promised, if that had happened, we wouldn't be in the situation we're in today. So it all falls on Mr. Trump and his reckless behavior. Incidentally, a lot of it falls on Biden too, because when Biden took over after Trump had withdrawn from the agreement,

he sat on his butt and did nothing to bring that agreement back in. The agreement should have gone in immediately.

Immediately. And Biden instead said, well, let's renegotiate it. Let's see if we can get something else. This is the American negotiating attitude. These are all these extremist elements—many of them academics too, incidentally. I have my friends at Stanford, who I like to bring up, and, you know, they're completely misinformed about this and don't recognize that when you reach an agreement, you have an agreement. If you and I agree—if I agree to sell you an automobile and you agree to pay a certain price—I can't come back to you later and say, well, I've decided you really should pay twice the price. I really think that's something. That's not an agreement. And what diplomacy is, is no different from interactions between human beings. We have trust in each other.

We understand the rules. We have implicit rules that we both understand. We come into the process with a certain common understanding of what the rules of engagement are, and when we reach an agreement, we stick by it. We don't just arbitrarily change it. Or, if we want to change it, we could—I could say, well, you know, the car I'm selling you, I realize now I inadvertently misinformed you. It's really not in the same shape I thought it was in, so I should charge you less. That's what a fair agreement is about. We aim at building trust so that the next time we talk with each other and have an agreement to make, we understand that both sides are aware of and respect the interests of the other partner in the agreement.

It's a partnership. These people don't behave that way, and they've destroyed the whole foundation of diplomacy—not only between Iran and the rest of the Western world, but also between Russia and China and the rest of the Western world. So we've got a lot of rebuilding to do—"we" being the American government. And if there's a new government at some point, we don't need another Biden replacement. We need people who go in and say, "We realize this situation is unacceptable—has been unacceptable—and we're going to demonstrate that we understand what an agreement is, and that we understand how to keep the terms and make an agreement in good faith."

And instead of taking all this, we've got to take advantage—no, the agreement has to meet the needs of the different parties involved. Both parties have to understand that each side has needs and make compromises that are compatible with their own. Then, in good faith, follow through. That's the way an agreement works. You can't say, "Oh, now I have an opportunity to screw them on this." It doesn't work that way. If it does, you end up in the situation the United States is in now—nobody trusts you, and nobody should trust you. So that's the situation we're in. Now, what I'd like to talk about is the great danger we face of an escalation to nuclear war.

As I mentioned earlier, we have a very dim ray of light in Trump backing away from this absolutely crazy and outrageous threat he made against the Iranians, and understanding that they meant business. But what concerns me—and I hope it will concern your audience as well—is that everybody's trying to understand what's going on, and war is fundamentally unpredictable. As this conflict evolves, the situation for both sides is going to change, and Iran's leverage is going to increase. It

seems that way. I wasn't sure of this initially, incidentally—I was skeptical that Iran could inflict the tremendous levels of damage with ballistic missiles that they're now achieving.

Part of that, I might say, has to do with the estimated accuracy of their ballistic missiles, which I've talked about on several occasions. In the earliest attacks, the accuracy of those missiles was lower—they weren't as precise as the ones we're seeing now. I had no way of knowing, though I was suspicious, that they were using older missiles. Their purpose, it seems, was to get the Israelis to use up their interceptors on those older missiles, which weren't very effective to begin with because many of them were breaking up at high altitudes. A lot of the warheads hit the ground and clearly didn't explode—you could see there were no flashes on the horizon in many cases.

So those warheads weren't as reliable as the ones on the more modern ballistic missiles, which are reentering on more stable trajectories. So we're now beginning to see a shift. Now, what we don't know—but we can make a pretty reasonable guess about—is how many of these more modern ballistic missiles the Iranians have. Well, we don't know. But we also don't know how many modern drones the Iranians have. And we can bet, in the case of the drones, that there are a boatload of them—that the drones are far more numerous, in large and significant numbers, relative to the ballistic missiles. They're just so much less expensive to make, so much easier to manufacture. The base for producing them is available elsewhere.

I mean, China can manufacture these things at a fantastic rate. We don't know how much help the Chinese will choose to give the Iranians, and they may well be doing it—or will do it. The Russians are the same. These Shahed-type drones, which the Russians, I guess, call Geran drones, are very similar and easily modified if transferred from one country to another for special purposes. The technologies are all interchangeable and compatible—they're universal. And this drone war could go on for a very long time. Without air defenses, the weight of capability inevitably goes to the Iranians. So I'm guessing—again, it's a guess—that we'll continue to see large amounts of damage from ballistic missiles, no question.

But I think the significant levels of military damage and the degradation of general air defense and military capabilities in Israel and the Gulf are going to keep accumulating from drone attacks. At least, that's my best guess. But as the situation further deteriorates for Israel and the West, the question of whether a nuclear response might eventually come up—particularly on the part of the Israelis, who may reach a point where they begin to see their survival as a state under threat—I think that could happen. I think the Israelis are now suffering what I'd call serious damage, but not existential. I mean, you know, the society is rich, it's robust.

It's been under attack many times, so it's developed a lot of passive defense capabilities that help keep deaths down. The total weight of munitions that can be delivered by Iran is much lower than what has so far been delivered to Iran. Over time, that may change. So the situation is bad and should be getting people's attention, but it's not necessarily existential, at least as far as I can tell. It's enough that anybody with common sense would be talking about stopping this—but we're not

dealing with people who are showing much common sense. That's my concern. Now, I sat down and asked myself: what could Iranian military planners be thinking about in terms of retaliating against an Israeli nuclear strike on Iran?

Because I don't believe anything is truly predictable, but I also don't believe that Iran would be the first to strike Israel with nuclear weapons. I think the Iranians are very sensible. They've had enough, and I don't blame them. They want this thing ended—they want all these attacks on them, this constant attempt to crush them, to stop. And they're going to follow this through. No question. No question from my point of view. At some point, things are going to get really hairy, because the Israeli government is led by messianic lunatics. We have a gangster sociopath in charge of the American government. He may be showing signs of dementia—I can't tell, because this guy is so nuts that it's hard for me to tell.

He's not surrounded by many responsible people, although I think there are some there who—well, they're not very admirable, but they know better. I think this guy J.D. Vance is not crazy. He has no ethical standards of any kind, but that's different from being crazy and suicidal for the country. And I think he may eventually play a constructive role if he's in a position to do so—if it doesn't cost them anything. It's like a lot of these people; I like to describe them as the kind who'll do the right thing if it doesn't cost them anything. So he's in that category. He's surrounded by people like Tulsi Gabbard, although she's made very bad judgments in my view.

I think she understands the situation. I do think she's very smart, and I do think she's going to stick to her guns when it comes to telling the truth. I think she's hurt herself badly, but that's a different discussion. Still, I think she knows what she's doing, and she's going to speak the truth to this lunatic. And she's going to have some support, I think—I'm hopeful from someone like Vance. I mean, she's not going to be totally out in left field as she has been. So I'm praying that some form of rationality will possibly, possibly play a role in the future. But Netanyahu is a man for whom I just don't know how to establish boundaries. And he's surrounded by these messianic religious lunatics who...

## **#Nima**

They remind me—he's becoming like an AI character lately, mostly because he's hiding somewhere.

## **#Ted**

He's not out that much. It's like this—I think I told you this joke from an Israeli friend of mine. He was dragging me to the Wailing Wall, and I said to him, "Reuven, I feel like we're going back 5,000 years." And Reuven says to me, "Oh no, much further." That's the way I feel about these people—they're crazy. Five thousand years isn't enough time to go back to describe them. Anyway, hopefully the forces of rationality, which do exist in Israel—I mean, I know many people who are quite rational—they're just not in control. But I'm hopeful that some people within the society, who have a

rational and deep understanding of how dangerous the situation is, will eventually begin to influence things. I don't know. I'm just hoping.

But if my objective in the discussion to follow is to explain to people that Israel—and I'm explaining this to everybody, to Americans, Western Europeans, Israelis—I want Israelis to know this, I want the average Iranian to know this, I want the Gulf state leaders to know this: that a nuclear attack on Iran will almost certainly, almost certainly, be answered by a nuclear attack on Israel. Iran has the capacity to do this. They may not be a nuclear weapons state now, but if they are hit, they can sit in those tunnels, because you can't close the country down. Even tens or dozens of nuclear weapons on Iran will not end Iran as a functioning, diversified state. Its underground facilities will continue to operate, and they'll be able to take that 408 kilograms of uranium hexafluoride they now have and convert it into 10 or 11 atomic bombs.

Those atomic bombs are different from the modern weapons I've talked about in the past. The modern weapons I've discussed tend to be thermonuclear—much higher yield. They're the kinds of weapons the United States and Russia deploy, and now China too. These are much lower-yield bombs, but people should make no mistake: they are as deadly, or even more deadly, than the higher-yield weapons because you can use them efficiently. And I sat down and asked myself—if I were... and, incidentally, I have worked on nuclear weapon attack planning. Maybe I should be tried as a war criminal sometime in the future. But when I was in the Pentagon, I looked at war plans—detailed, real war plans—and studied the ground zeros and the ways of optimizing those attacks.

And what do I mean when I say "optimizing those attacks"? Those attacks were technically and carefully optimized to do the most damage possible with the available destructive capability. Okay? That's what optimization means when you talk about optimizing a nuclear attack—you're talking about optimizing death and destruction, maximizing death and destruction. So, if you're a military planner in Iran, your country has been attacked, and you have one group of people fabricating the weapons and another group planning how to use them. Well, let me show you how they might use them. And let me tell you, "might" is a weak statement, because I think this is a prediction. I think this is certainly what could happen—among many other kinds of things that could happen.

And one of the things to do would be to go after Tel Aviv. Tel Aviv is the big population center. It's a large-area target, a very dense target. It's the economic and population center of Israel. There are, of course, other important centers, but this is the one place you would certainly attack among others. So I sat down and asked myself, what would happen if I took three of my ten or eleven atomic bombs—these are weapons no more powerful than what destroyed Hiroshima in 1945—and laid them out in a pattern over the most densely populated areas of Tel Aviv? I did that with a deep understanding of nuclear weapons effects.

I don't sit around doing stupid things like thinking about blasts alone. There are going to be blasts, there's going to be nuclear radiation, and there are going to be firestorms produced by these weapons. And the firestorms—if I space the weapons out—can propagate and coalesce to make

larger areas of fire than I could get with the individual weapons. So I would space them accordingly. Now, let's look at slide one. Okay, this slide shows three 10- to 15-kiloton, low-yield atomic weapons. They're fundamentally similar, but the physical effects express themselves in a different manner.

First of all, what I've shown in the middle are little icons for the fireballs. Just to remind your audience, when a nuclear weapon detonates—in this case, these are low-yield nuclear weapons—the fireballs are balls of superheated air, about 1% the density of normal air because the weapon is so hot. In this particular case, the interior of the nuclear weapon reaches about 10 or 15 million degrees Kelvin. A thermonuclear weapon might reach 100 million degrees Kelvin, so it's a lot hotter. But 10 million degrees is plenty hot. That fireball is a region of superheated atmosphere that's been raised to that temperature.

This is at the maximum. It's forming a bubble in the air—maybe a few hundred meters, a fraction of a kilometer in diameter. So it's not miles across. Its surface temperature is about 7,000 or 8,000 degrees Kelvin, which is a couple thousand degrees hotter than the surface of the sun. That yellow area below is the region on the ground where fires will be set. So this shows you the rough area. Notice there are spaces in between where the fireballs won't necessarily be bright enough to ignite buildings or trees outside. Those are open areas, and that's intentional.

I've spread this thing out intentionally far enough so this occurs. Now, something different that happens with the lower-yield nuclear weapons, which you don't experience with the higher-yield ones, is what's called the prompt nuclear radiation—from the radioactive products that undergo nuclear disintegration to release all this energy. So you have uranium-235, and these are uranium weapons; we're not talking about plutonium. They break up into strontium, cobalt, xenon, and all kinds of smaller nuclear fragments. Those fragments are very close together when the nucleus disintegrates. The electric field is very strong, it blows them apart, and they release a tremendous amount of kinetic and electromagnetic energy.

The kinetic energy is small compared to the light and heat because, when the temperature is that high, most of the energy goes into light and heat, not physical expansion. But these materials are also undergoing nuclear reactions, independent of the fact that they're creating a very hot ball of air. They're giving off nuclear radiation. Normally, with a very high-yield weapon, if you were in a region where that nuclear radiation was very strong, you'd already be dead from the blast and heat effects, because the higher yield creates so much more blast and heat relative to the nuclear radiation that it wouldn't matter that the radiation was there.

But with these lower-yield weapons, you're going to have nuclear radiation that you could actually experience relative to the blast and yield. I'll describe that shortly. You have what's called—sometimes it's called—prompt radiation. The fireball is radiating light and heat, and there's a blast wave projecting out from it. At the same time, gamma rays and neutrons are coming from the disintegrating nuclear material. If you're close enough that you might imagine surviving for a short

time from the blast and heat, you could still get enough prompt radiation to kill you. You get it all at once, of course. So it's, you know, kind of—it has to do with luck.

If you're lucky, you're in the direct path and you go quickly, you know. So if we look at slide two, I'm not talking about the radiation now from the nuclear reaction—I'm just talking about the fires that are set. Radiation has been, and I'll talk about that shortly, but you have these regions that are set on fire. Now, if we look at slide three, you can see the instantaneous effects of the flash, because in the middle you see the white cloud of the rising mushroom cloud. The rising mushroom cloud is this vast, heated, buoyant ball of superheated air. Incidentally, that superheated air is partly white because it's filled with moisture from lower altitudes that's rising up, cooling, and condensing into water droplets.

And those water droplets are going to be important. So that's a water cloud, to some extent. It's very radioactive. But that's different from the stem you see below, which is a smoke column following the path created by the air moving from the buoyantly rising mushroom cloud. The buoyancy is carrying it upward, and there's a draft behind it pulling in smoke from the fires that are violently burning on the ground. Now, the most violent fires are burning close in. Further out, the fires are not so violent yet. So, within seconds, you have these violent fires developing. If we go to slide four, we see the same situation with Hiroshima.

The first slide wasn't showing exactly the same phenomenon. Slide five just diagrams the process. The point of slide five is to show that the top of the cloud—depicted now with a yellow or grayish background—is made up of very hot air and condensed water droplets. As the cloud rises, it expands and cools, and the water vapor up there mixes with the ash coming up from the ground below. Now, if we go to slide six, just to get a sense of what's happening on the ground: out to about half the diameter of those little red circles I showed you on slide two, the blast wave is very intense, along with the heat.

So we're not at the outer edge. At the outer edge, you don't see this kind of extreme effect. If we look at one second after the detonation, on the second inset to the right on the top row, you can see the front end of this building burning off from the fireball. Then, five or ten seconds later, on the lower left inset, you see the shockwave arriving and destroying the building. That's what would be happening on the ground. It would take ten or twenty seconds before the shockwave reached the edge of the red areas I'm showing you. Fires would already be burning. Some of them would be put out by the wind, and some would be intensified. General blast damage would be everywhere.

At the edge of the fire zone, you would see, uh, small fires burning, but those small fires would be burning without anybody to put them out. I mean, everyone is running—people are hit with flying fragments, people are looking for loved ones. If they haven't been killed, many have been severely burned by the flash, if they were unlucky enough to be on the side of the fireball. So what you have is—if you look at slide seven—areas that are closer in, burning violently because they've been set on fire very quickly. Not everything has been knocked down, because the blast wave from this small

nuclear weapon isn't necessarily intense enough to destroy a lot of very strongly built concrete and steel buildings.

It doesn't matter that they're knocked down. Everybody in them is dead or will die, because everything will be on fire. They'll be towering infernos. The whole city will be towering infernos, even at the edge of the fire zone, because the fires will be set inside taller buildings. There will be no way to stop the fires. There'll be no water pressure for sprinkler systems to work, and everything will just become a gigantic fire zone. So if we look at slide eight, what we'll see is a zone of intense fires—the most intense fires—within tens of minutes of the detonation. So we're talking tens of minutes now. I tried to depict it as a zone of increasing intensity of fires in the middle.

And then in the next slide, we begin to get the buoyantly rising air from the separately burning zones of fire. Let's go to slide nine, please. What's happening here is that you have buoyantly rising air, which is causing wind from the outside to move in—from the cooler areas where the air is denser—flowing inward and eventually becoming a gigantic mass fire. Let me show you. Let's go to slide ten. This is what the whole area would look like. By spacing the weapons out, I can intentionally create a zone of extraordinarily intense fire. So it's a different kind of—well, the result is the same.

It's the same—everyone is killed. I mean, there are no survivors in this zone. Everyone is killed. It's just a matter of whether it happens within tens of minutes or a few hours, because the air temperature will rise above the boiling point of water in this huge area—maybe 20 or 25 square kilometers. So, you know, a large area, with the air temperature driven by fire. The heat isn't from the nuclear weapons; it's from combustion, from very high air speeds. The asphalt on the streets will literally become molten and melt. Rock in the buildings will become superheated. People in underground shelters will be trapped—they won't be able to go anywhere because there'll be high winds and extraordinarily high air temperatures.

Those who are in shelters that can be sealed—some of them could be, some of them won't be—may be able to survive for hours before carbon monoxide and heat from the stone above seep in, creating gigantic ovens where they'll either die of carbon monoxide poisoning, if they're lucky, or be roasted by the intense temperatures generated by the fires. So what we'll see in slide 11 is this entire area burned out. But this is not total destruction. It looks too clean—much too clean to give you a true understanding of how devastating and how toxic the environment would be. If we go to slide 12, what I've shown here is the range. The graph on the right is the most important.

Basically, this shows you that the vertical curve is the dose in air, in rads. It's not very important. The flat red line shows the dose at which you'd get enough radiation from the flash—the radioactive flash—which is emitted in seconds. This happens in seconds; it's not a long time later. It's sometimes called prompt radiation, and that goes out to about a kilometer in range. So if you're

within a kilometer of the detonation point—roughly half the diameter of those red circles—you'll have received a lethal dose of radiation. You might get somewhat less if you're in a building; you get some protection. If you're in a shelter, you get some protection.

But there are all these different physical effects that are going to be happening. So you'll have this secondary effect from radiation. And of course, what slide 13 shows is the region of immediate lethal radiation. But what I'm not showing is the area subjected to what's called black rain. I showed you these radiation clouds—the mushroom clouds rising—which were sort of white, and below them you saw this black soot from combustion on the ground. That eventually all mixes into a mass fire zone. The water vapor in that cloud will be black with soot, filled with soot. Soot is just incomplete combustion of materials on the ground, but the carbon is covered with materials that also didn't burn—could be nitric oxides, nitrous oxides.

## **#Ted**

Things like literally cyanide, all kinds of combustible, partially combusted materials. This stuff is not only in the soot, but on the soot, and people will be breathing that in as the fire goes on. That stuff will get into the lungs. Nitric oxide, for example, will tend to block oxygen absorption through the membranes in the lungs. Cyanide, obviously, will be poisoning people. The carbonaceous material will damage the delicate mucus on the inner lining of the lungs. That creates a tremendous toxic hazard for people on the ground who are caught in the fire zone. Now, if we look at slide 14, we can see—this is Hiroshima—the crisscrossed area on the upper left side shows an area of heavy rain that fell to the north and west—north and east, I'm sorry—north and west of the actual target area, which was burning violently.

That was an area of rain known as the black rain. You have soot in the air and water vapor condensing because the soot forms condensation regions in the sky for the water vapor to collect on. The water particles grow large enough to become droplets and fall to the ground. This was a black rain that fell to the ground. The black rain is radioactive; it contains toxic materials, and it can fall intensely for an hour or more after the initial rainfall. If I show you slide 17, what I've done is project that area of black rain from the Hiroshima detonation onto one location—making an assumption about wind direction and the areas of Tel Aviv that would be subjected to this black rain. Now, of course, if we go to slide 18, I was very late; I haven't had a chance to put all these graphics together.

I'm literally putting it together. As you know, I was late for our presentation. You can see that there would be a vast area subjected to intense rainfall filled with black, toxic rain. Now, I don't have details on the extent of the contamination at this time. That will be for a later discussion, because I'm still in the process of doing the research on this. Most of my analysis has been for higher-yield weapons when I talk to people about nuclear effects, so this is a different situation. I mean, it's

obviously deadly, but it's different in character. And I'm taking the trouble to lay it out because, from my experience dealing with people in the past, if you lay it out and talk about it in a candid way, it becomes more real. It's not just an abstract "oh, there's a blast area."

Everyone's dead. Well, of course that's terrible, and that states the final fact. But what's really important to understand is how this happens—because if you understand how it happens, you begin to internalize it as a human being. And that's what I'm trying to do here. I'm trying to help you understand what some poor human being goes through. I'm trying to build the empathy that we all should have for other human beings. Some of us are lacking it, unfortunately, but we should all have it. I'm making this as real as I possibly can. That's what I'm doing. I'm not trying to punish the audience. I'm not trying to say, "Oh, let me show you all these terrible things." I'm trying to help you understand the reality.

And my hope is that by understanding the reality, you'll understand the consequences in a more human way. And by having a more human understanding, you'll be more motivated to do something to divert us from this path. That's basically my aim in this kind of, you know, very unpleasant discussion. So, if we go to slide 22, what we have is an area of about twenty kilometers that's burning. Inside it, hot air is rising, the temperature on the ground is above the boiling point of water, and the air speeds are at hurricane force. The air above is buoyantly rising. For example, if you wanted to fly a helicopter in to save some people, you couldn't do it. The upward-moving airflows would be hundreds of miles per hour. The helicopter would be shaken to pieces.

You couldn't fly in to save people. If you're in that zone, you're gone—you're dead. There's no hope for you. So what you have, as shown in slide 25, is this tremendously, violently rising cloud—25 to the right—of turbulently moving air filled with smoke, toxic smoke. Even an aircraft like a helicopter couldn't fly through it. There'd be no helping anybody. And when you get to slide 26, we'll show you the ground situation. You'd literally have tornadoes on the ground, formed by unevenly burning areas. Wind speeds in some places would be much higher than in others. Flying debris would be traveling at hundreds of miles per hour—you could be hit by it. And that debris would be violently burning.

So the fires themselves—it would be like when you take a bellows and blow into a fire, making it more intense. Fire-generated winds would be tremendously strong. If you look at slide 28, people who tried to escape shelters onto the street would be literally incinerated. If they went into the air, they might be lucky. Slide 30 might show you what people would look like in the shelters after hours—they would be completely destroyed in there. So this is the kind of situation you'd see. Slide 32 shows how the streets would be filled with debris after the attack. The streets would be so hot—I'm talking tens of hours, maybe a day or two after this phenomenon. Notice, buildings could still be standing. This is Hamburg, but it could just as well be Tel Aviv. Many buildings would remain because the blast wave wouldn't have been intense enough to knock down everything.

But everything combustible—everything that could burn—would be gone. The heat contained in the rocks and asphalt would be so great you couldn't bring a tracked vehicle into this area for days. Nobody in this area would survive. If we look at slide 34, it shows a small area of Hiroshima. What you see on slide 35 is very close to what you'd see in downtown Tel Aviv. Next slide, please. It would look like this. Notice, this is only about 3,000 feet—one kilometer—out. We're talking about 20, maybe 25 square kilometers of Tel Aviv that would look like this if you took satellite photographs. That's what the result would be if Israel—if the Israeli political leadership—said, "We're going to attack Iran, and those guys will not be able to respond."

So we're going to end this by saying: a nuclear attack on Iran would bring that kind of result for Israel. It would also be the result for those unfortunate victims of an Israeli attack on Iran, in the zones where the Israelis hit with their relatively low-yield nuclear weapons. The reason I'm going through this is that I'm really trying to say to people: let's not let this happen. The idea that you can finish off Iran—if you're some Israeli lunatic—by attacking Iran with nuclear weapons is a pipe dream. Iran will have the ability to construct nuclear weapons, and it might be weeks or even a month or two later. But this would be the final outcome, and nobody would win. Nobody would win. So what I'm trying to say is: sober up. Let's sober up and start thinking about bringing this thing to a stop. And I'll end here.

## **#Nima**

Yeah, I think everybody should understand the reality of using nuclear weapons. As you've said, it's going to be devastating for everyone.

## **#Ted**

Don't think that because they're lower-yield weapons, the price isn't as high. It just plays out a little differently. But the net result is millions—millions of people dead. Millions of people.

## **#Nima**

Exactly. I hope the people who are in positions of power—the decision makers in the United States, in Israel, in Iran—are listening to you.

## **#Ted**

As usual, I hope I've ruined your audience's day—but I also hope we're avoiding something worse in the future.

## **#Nima**

Exactly. Thank you, Ted. You always bring important issues to the table, and people need to understand the reality of using nuclear weapons.

## **#Ted**

This is what Larry Wilkerson brings—he's pointing out these important things. I can't add much to his discussion; he knows more about these issues than I'll ever know. But where I can contribute is by putting some meat and technical substance on it that Larry can then run with. And that's what I'm trying to do here.

## **#Nima**

Thank you.

## **#Ted**

Thank you, Ted. See you soon. You take care. Bye-bye.