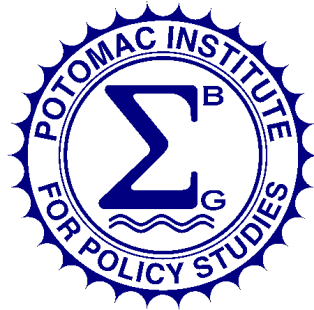


POTOMAC INSTITUTE FOR POLICY STUDIES

**BIOLOGICAL TERRORISM:**  
**POLITICAL AND LEGAL RESPONSES**  
*A Roundtable*



**8 OCTOBER 1998**

POTOMAC INSTITUTE FOR POLICY STUDIES  
1600 WILSON BOULEVARD, SUITE 1200  
ARLINGTON, VIRGINIA 22209



## **PREFACE**

*This roundtable was sponsored by the Potomac Institute for Policy Studies. Views expressed in the following Proceedings Report are those of the individual speakers, and do not necessarily reflect the opinions of the other participants or the Potomac Institute for Policy Studies.*

*Please note that for academic purposes, this transcript has been edited and it not a verbatim representation of the roundtable.*

*The Potomac Institute for Policy Studies thanks the presenters for their participation and contribution to the roundtable.*



# **Biological Terrorism: Political and Legal Responses**

**Sponsored by the Potomac Institute for Policy Studies**

## **Date**

Thursday, October 8, 1998

## **Time**

9:30 a.m. - 11:30 a.m.

## **Place**

Potomac Institute for Policy Studies  
1600 Wilson Boulevard, Suite 1200  
Arlington, VA 22209

## **Opening Remarks**

Mr. Michael Swetnam  
*President, Potomac Institute for Policy Studies*

## **Introductions**

Professor Yonah Alexander  
*Senior Fellow and Director, Center for Terrorism Studies, Potomac Institute for Policy Studies*

## **Speaker**

Dr. Jean Pascal Zanders  
*Director, Chemical and Biological Warfare Project, Stockholm International Peace Research Institute (SIPRI)*

## **Panelists**

Dr. Alan Goldhammer  
*Director of Technical Affairs, Biotechnology Industry Organization*

Dr. Fred Iklé  
*Distinguished Scholar, Center for Strategic and International Studies*

Mr. Joseph Cirincione  
*Senior Associate, Carnegie Endowment for Peace*

Mr. David Siegrist  
*Study Director for Biological Terrorism, Potomac Institute for Policy Studies*

## OPENING REMARKS AND INTRODUCTIONS

### **Mr. Michael Swetnam**

*President, Potomac Institute for Policy Studies*

### **Professor Yonah Alexander**

*Senior Fellow and Director, Center for Terrorism Studies, Potomac Institute for Policy Studies*

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**MR. SWETNAM:** I'd like to take this opportunity to welcome all of you to the Potomac Institute for Policy Studies. A number of you have not been here before and I really am pleased that you're able to take the time to join us today to talk about some extremely important and growing issues.

The Potomac Institute is a not-for-profit, non-partisan think tank located in the Washington area that is principally concerned with technology, technology policy, and how technology policy is affecting society and government. We have embarked on a number of studies over the last several years on the changes in technology investment by the United States government and commercialization of technology in the National Aeronautics and Space Administration (NASA) and the Department of Defense.

We do an awful lot of work for the National Science Foundation and the Next Generation Internet (NGI), and where the information revolution is going. And for the last couple of years we have had a program growing -- once embryonic and then modest and now what is a good and sizable program under Yonah Alexander -- focusing on terrorism and the issues of terrorism.

The first goals for our program two years ago were to help raise the public awareness of the increasing threat of terrorism in our society and around the world, and of late we've turned to a number of forums and activities which we hope will help identify and sort out the policy and technology options for dealing with terrorism.

We are really pleased that you took the time to join us today for a discussion with a distinguished scholar from the Stockholm International Peace Research Institute (SIPRI) in a roundtable discussion led by Yonah Alexander. We really welcome all of your comments and thoughts on the topics that are discussed today and on what we're doing at the Potomac Institute for Policy Studies. Once again thank you very much for coming.

And with that I'd like to turn it over to Professor Yonah Alexander who will introduce everyone and moderate the program.

**PROF. ALEXANDER:** Since we are planning to focus on the biological threat and the responses, I would like to remind everyone of the context and the contributing factors that encourage terrorism in general, and then specifically to look at the terrorism issue and how it is linked to the biological threat.

As all of us know, there are many generic political, social and economic factors that contribute to the expansion

of terrorism. I would like to list ten areas that are significant in terms of encouraging terrorism:

One: the negative consequences of the collapse of the Soviet Union.

Two: ethnic, racial, religious and tribal intolerance and violence.

Three: the escalation of propaganda and psychological warfare.

Four: extreme nationalism and separatism.

Five: regional conflicts that defy easy solutions.

Six: intensification of criminal activity and narco-trafficking.

Seven: population explosion, migration expansion, and unemployment.

Eight: the current economic and financial crisis and the growing economic gap between north and south.

Nine: the environmental challenges.

And ten: the arms development proliferation of both conventional and unconventional weapons.

These are the broad challenges that societies will have to deal with in the coming years -- beyond the year 2000 -- as all of us know. But there are also very specific conditions that encourage terrorism, both conventional and the possibility, if not a probability, of biological, chemical and nuclear terrorism. I would like to emphasize that we cannot discuss biological terrorism without looking at these contributing factors, which are very specific to the question of terrorism:

One: the absence of a universal definition of terrorism.

Two: disagreements about the root causes of terrorism, whether they are political, economic, or social.

Three: the religionization of politics or the politicization of religion.

Four: the exploitation of the media by terrorists.

Five: the double standard of morality that exists today in the world.

Six: the loss of resolve by governments to take appropriate action.

Seven: the violation of international law by states that are signatory to conventions.

Eight: the weak punishment of terrorists.

Nine: the complexity of our modern societies.

Ten: the very high cost of security, particularly in democracies.

The bottom line is this: we have to deal with terrorism as a permanent fixture of international life. The tragedy is that the stakes are much higher simply because of the proliferation issue. We see more and more nations with biological, chemical and nuclear capabilities, and greater

availability of the materials necessary to manufacture such weapons. And in fact, the recent Iraq crisis underscores this reality. So the proliferation certainly increases the opportunities for super-terrorism: biological, chemical and nuclear.

Mike referred to the role of the Potomac Institute for Policy Studies. Last month we had a meeting here of a group of people who are interested in this subject and they made a number of useful observations. I'd like to mention two which are relevant for our discussion today:

First, that the academic community, think tanks and policy-makers must stay focused on the long-range approach to this kind of threat, and avoid dealing with it sporadically. We have to continue our consistent focus on this issue, and clearly the Potomac Institute for Policy Studies is making a serious effort in this direction.

And second, that although the United States declared war on terrorism recently, the implications of the declaration are not very clear and so we still have to deal with the conceptual aspect of that.

## **DR. JEAN PASCAL ZANDERS**

*Director, SIPRI Biological and Chemical Warfare Project*

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**DR. ZANDERS:** Thank you very much for that introduction. I would like to thank the Potomac Institute for inviting me here. This is my first trip across the Atlantic and I'm really being honored, and I must say even being kidnapped by Professor Alexander so that I could be here.

Let me first briefly introduce SIPRI. Most of you are familiar with the institute, especially through its red bible, the SIPRI yearbook, which is published every year. The Chemical and Biological Warfare (CBW) Program at SIPRI has existed now for over 30 years. The CBW Program is one of SIPRI's longest running projects. Annual developments are presented in the SIPRI yearbook. It is one of our most important endeavors, simply getting the yearbook out in time every year.

My background since 1986 has been in chemical and biological warfare and disarmament. I have been looking mostly into armament processes and, by extension, into proliferation issues. Not proliferation viewed from the supply side, which is like the transfer mechanisms going from possessive states to non-possessive states looking at export controls, but more towards the demand side, and why certain states wish to acquire chemical or biological weapons.

Now, what I'm going to report on today is mostly trying to see whether the models of analysis which we apply to proliferation with respect to state actors can also be applied to sub-state actors, such as terrorist organizations. I have to say I'm not a specialist in terrorism; my opinions given here are those of somebody who has been dealing with chemical and biological weapon programs.

Now, it seems to me that since the Potomac Institute focused the past couple of years on the biological issue, we would certainly like to deal with that specific aspect today. Sometimes it's very difficult to separate the biological from the chemical and even the nuclear on some level, but at any rate our focus today will be mostly on biological terrorism.

And as Mike indicated, we are very pleased that we have such a rich panel here. Our featured speaker is Dr. Jean Pascal Zanders from SIPRI, a major research body in this field.

Dr. Jean Pascal Zanders is a leader in SIPRI's chemical and biological warfare project and also an editor of SIPRI's chemical and biological warfare studies. He has worked at a number of institutions in Belgium, such as the Free University of Brussels. He published extensively in the field and he is going to report on his work and SIPRI's work, and relate it to the terrorism issue.

Second, I'm a European, and perception in Europe regarding terrorism is perhaps somewhat different from that of the United States. In our societies we have had much more exposure to terrorism -- it's part of the political tradition. I would say -- and I would even venture that most, if not all, of the democracies in Europe were born in terrorism at some point. They were definitely born in blood.

So from the viewpoint of terrorism with chemical and biological agents, I would say as my first statement that this is not new. This goes back for thousands of years, and we find examples in all cultures across the world. Indeed, poisons from the animal, vegetable and mineral kingdoms (as they put it at the time) have been used throughout and they were well known.

We find examples of law in different societies which mete out very harsh punishments for people who use poison to assassinate somebody else. And one of the reasons why these punishments were meted out was, of course, the element of what we call today "asymmetry" in the relationship. If one trains his whole life to become a knight, to have the skills of fighting some sort of noble war somewhere, somebody with poison can overcome these particular strengths; hence, one of the reasons of the harsh punishments.

Nevertheless the attraction always remained because if successful, the person would be killed and there was no way the recipient of the toxic substances could defend against it.

One other important element in the past, which is perhaps one of the contrasts with today, is that the use of these chemical and biological agents was always

discriminate. A single individual, or perhaps two or three people were targeted, but it was never that the population at large would be at risk. We're talking about assassinations, sabotage and so forth, not about warfare.

So we can advance many historical examples to that; we can look at assassinations of political and religious leaders throughout history. But much more recently, we can use the case of the First World War. For example, German agents in the United States used biological agents to inoculate horses and other livestock which were going to be shipped across the Atlantic to Europe, to the Middle East and to the war fronts.

In the Second World War we also have a couple of examples, perhaps one of the most famous cases is the assassination of Reinhard Heidrich the Reich's protector of Bohemia and Moravia, in 1942. Czech commandos were supplied with a grenade charged with botulinus toxin provided by the British. He was lightly injured, but succumbed immediately afterwards in the evening as a consequence of that poisoning. There are many reports also of Soviet bullets with aconitum filled to shoot German soldiers in occupied territories, and reports of Polish and Soviet partisans using biological agents to kill the occupiers.

After the war, there was the Georgi Markov case in 1978 with the adresin pellet; the Bulgarian exiled in London's assassination is well known. And more recently, if we even went to the case of state terrorism, we have the reports now from the Truth and Reconciliation Commission in South Africa where the apartheid regime developed things such as beer cans with thallium, cigarettes with anthrax, peppermint chocolate with cyanide, biological agents in deodorant and so on. Of course this is a much more recent case, and one of state-sponsored terrorism.

Now, having said that, the Aum Shinrikyo case: the 1994 Matusumoto and 1995 Tokyo incidents are a watershed development, but I believe for a different reason than what is traditionally advanced in the literature. The new element, as I see it, is that we get the terrorist use of not just chemical and biological agents, but chemical and biological *warfare* agents, and by that I mean agents which were developed and selected by the military establishment to support certain military tasks in the military doctrine of the country to which they belong.

Because of that element, because we are speaking about warfare agents, most of my talk will focus on that element. It is my view that it is not possible for a single individual to develop, produce and use the agents, to do the reconnoitering of the area where the agent has to be released to coordinate the use, and so on.

The second element about this qualitative change, namely the use of warfare agents, is that we face a problem of rationalization. We understand to a certain extent what terrorism is, we understand to a certain extent what chemical and biological warfare is, but to bring both components together, that defies a little bit our understanding.

In my view (and here I'm speaking of course as somebody dealing with chemical and biological warfare agents mostly), the popular association of CBW with weapons of mass destruction complicates the issue greatly. Privately, I don't think that chemical weapons are weapons of mass destruction, they are weapons which have throughout history been used as tactical weapons on the war front.

The main purpose is not even to kill people. You will find that in many tactical situations to deny terrain to the enemy, you could use them to temporarily incapacitate enemy forces so as to overwhelm the medical logistics of enemy forces so that people are kind of knocked out of action for a period of several weeks up to several months. But as mass destruction it's difficult.

As for biological weapons, the potential is definitely there; but of course there are so many factors, especially in the area of dissemination, that creates problems. And again the weapons have to be correlated to a military doctrine and especially to these problems of controllability in terms of how you would use an agent for a specific military goal. That has been a major element.

Another consequence of lumping everything together under weapons of mass destruction (WMD) is namely that since the Second World War nuclear weapons have become our kind of yardstick to measure everything. And because of that one easily gets the impression that chemical weapons are easy to produce, that biological weapons are easy to produce, that they are cheap. And I think of the expression "The poor man's atomic bomb," sometimes are chemical weapons, sometimes are biological weapons.

It is my contention that chemical weapons programs and biological weapons programs still pose major technological challenges, especially for the countries today who wish to acquire such weapons. There is a great correlation between the level of technological and industrial development of a particular state and their interest in chemical and biological weapons. The most advanced states have abandoned their interest in the past. We can see very easily in the '50s how the United Kingdom abandons chemical and biological weapons.

Most of the West European states have abandoned their interest after the Second World War. Most of them, even Belgium, had a small program, offensive program, before the Second World War. All has been abandoned as they move in what we call the third industrial revolution: microtechnology, processors, information, semiconductors, and so forth.

And looking around the world, there are states more or less stuck in the second industrial revolution which was around the turn of the century. In organic chemistry, with the least typical case, there you see the great interest in chemical and biological weapons. If you go to Southeast Asia with the newly industrialized countries leaping immediately into what we call the third industry revolution, interest in chemical and biological weapons is far, far lower, if it exists at all.

A number of states which do not have that level of development in the second industrial revolution have very little interest in these weapons. I mean if we are talking about those states, it's not Rwanda -- (indiscernible) that are going to get chemical and biological weapons. So that kind of reasoning I want to apply more or less to terrorist issues.

Now, from that perspective, if we wish to look at chemical and biological agents and terrorism, proliferation in general, proliferation to sub-state actors in particular, we kind of get into a, what I would call, proliferation paradox. Technology, the methods of producing chemical and biological weapons becomes much more accessible to a large group of people. This is part of proliferation, and it's probably something we don't even wish to -- I mean this is part of the general diffusion of technology and advancement of societies world over.

But what we see, the very fact of proliferation, the transfer, the flow of a possessive state to a non-possessive state, points to the fact that there are important deficiencies in what I would call the material base of the recipient of these technologies. By that I mean that the country, and definitely the terrorist organization as I will discuss a little bit later on, the country does not have certain commodities or certain technologies, production methods, or whatever to have an indigenous armament dynamic resulting in chemical and biological weapons.

Of course if it is in the level of, for example, the educational level of the country, the country could start a kind of program to bring up the overall level of education to a higher level, but this is going to take many, many years and this is going to cost a lot of money. And a country interested in chemical and biological weapons will usually find itself in a kind of security environment where that amount of time is not available. So in the short run, the medium run, perhaps, importation is the cheapest and easiest way to structure that particular armament dynamic to get chemical and biological weapons. In other words importing the things which it lacks in its domestic is the cheapest and easiest ways of acquiring.

From the supply side, this is of course the transfer of goods which we see. From the demand side, it is one decision which has to be taken to overcome that deficiency. So by definition really as a consequence proliferation is the expression of the limitations in that technological, industrial base of the political entity whether it's a country or a sub-state entity.

And the second consequence is, of course, that for the one wishing to acquire a chemical and biological capability, CBW still represents a form of high technology. Not to us anymore, but to them it still poses some form of major challenge which is reflected in major problems in development and production and also use.

So where does that lead us with respect to terrorists? Well, the first general statement we can make is probably that a terrorist whatever its size, even if we look at an organization such as the Aum Shinrikyo with its \$1 billion in assets, they will never have the resources of a state at their disposal.

The second element which plays an important role, as contrary to a state, is that it must operate illegally inside a state, so everything has to be in hiding. In looking at Aum Shinrikyo we see that the fear of police raids was a rather major impediment to the advancement of the program there.

Third, the material base, if it's already limited for a state, then for a terrorist organization it will be extremely narrow. First of all, there is very little scope, very little room for indigenous development of certain elements, so in other words it must acquire all the equipment, all the technologies and the skills from the outside. Countries wishing to acquire chemical and biological weapons can contract firms in other countries, they can rely on allies to acquire certain things. And these people coming from private companies or so can work legally or illegally on these weapon programs.

But terrorist organizations cannot hire outside technicians and specialists not only for the moral and ethical considerations of the people involved, and here we see for the Aum Shinrikyo that their recruitment drive was targeted specifically at certain groups, certain categories of people which they needed to implement their armament programs.

A fourth element playing a major role for terrorist organizations are the limitations and field testing of agents and delivery systems. Again Aum was pretty unique in having the kind of proving ground in Australia, but for most organizations which are much smaller in scope testing, actually testing these agents and delivery systems is a major issue. Even Aum had problems with their delivery systems.

And then the large-scale production of agents always remains a major challenge. We only have to look again for Aum with the VX they had. They were able to produce VX, but in very small quantities. And on the one or two occasions in which they used VX, it was more in the age-old tradition of assassinating a single individual, ejecting it into the face of an individual to assassinate the person. It's a kind of overkill, a fascination with high technology. But using VX to kill an individual is like overkill which was very traditional for them.

But looking at sarin, which they got from small production batches, they wanted to go to larger ones. They had major problems in terms of getting pure agents of large quantity. And especially the strain under which they had to produce sarin for the Tokyo incident resulted in only 30 to 40 percent purity despite all their infrastructure.

I mean it's also something when we talk about warfare agents, we think of what's in the arsenals of the United States or the former Soviet Union where we get close to 100 percent purity. I think that probably for terrorist organizations, unless they go to laboratory production, laboratory quantities, they will not have these very high levels of purity.

So to summarize, the consequences would be that most likely we're going to see production of limited quantities of relatively low-grade agents, and see a high degree of uncertainty with regard to dissemination technology. Even

with all the resources available it was primitive by all standards.

There are a couple of further issues from my background with respect to terrorism. I should say the acquisition of CBW agents is definitely possible. It's technological feasible.

A fifth element is thus far we have tended to look at groups like Aum and some other terrorist organizations as irrational. And probably the context in which they operate to us is totally irrational. However, I would like to stress that their use of CBW is not without purpose. This is not a question of simply causing massive mayhem in a society. A couple of times Aum resorted to its chemical and biological agents, in Matusumoto for example, for the specific purpose of killing three judges or at least incapacitating them totally, three judges who were to rule on a court case involving land property.

In Tokyo the reason why they went for the attack in the center of Tokyo was because they had received information from one of their informants that the police was going to raid the facility, so they wanted some kind of diversionary action against that.

So although the whole context in which Aum worked is totally irrational, the reason why they actually employed chemical and biological agents had very limited purposes. However, having said that, as I have indicated when I mentioned warfare agents, you need something of a military doctrine which governs the use of chemical and biological warfare agents.

The big question is with terrorist organizations, what are the principles governing the use of these agents for a terrorist organization? In particular more specifically, what's the follow-up of CBW use? I mean in the military context chemical and biological weapons, or especially chemical weapons, were never used in an end of itself; it always served other purposes which were formulated as part of the strategy or the overall military doctrine security policy.

Which leads me to the question, in the future, if the terrorist threat with CBW agents were to materialize more, can we envisage a sustained campaign with chemical and biological warfare agents? Which is very difficult in the literature, and I admit limited literature, on terrorism which I've gone through. I haven't found any statement or any indication towards some form of doctrine which would govern the use of CBW.

On the other hand all the efforts into chemical and biological warfare agents of terrorist organization, could it lead to a single act? In the case of Aum Shinrikyo of course we don't know what the future holds because it was ultimately limited to the use of sarin. And the way countries are preparing themselves to deal with the issue, I gather that there would be a massive reaction from law enforcement agencies and so forth to deal with the organization. So are we probably looking to a single event used for a different purpose, but not really governed by a doctrine which would require follow on as such.

A second element, and this I find to be something I have found also in state actors going for chemical and biological warfare agents, if we look at Libya, Iraq, and some other states, is that chemical and biological weapons give a false sense of power to the structured political entity having chemical and biological weapons. That false sense of power creates a number of internal pressures within the organization, within the state within the organization:

The first one is: to use these agents before there is a full technical development of these agents. In other words, they are used at an earlier stage than what would be a fully developed weapon. Which again leads to probably a lower quality of agent to be deployed.

And the second one, and this is of course especially in states, but probably for terrorist organizations too, that there are internal pressures to use chemical and biological agents before there is doctrinal development governing such use. If we look at the First World War, Germany used its chlorine on the 22nd of April 1915 before it had a military doctrine governing such use. The consequence was, of course, that the seven-kilometer wide gap in the front was not exploited because they were simply not ready to exploit the particular advantage they had.

We've seen the same in Iraq when they started using chemical warfare agents in 1982, 1984 and 1985. We see a pretty haphazard use of agents, basically oil drums filled with mustard or some other toxic chemical being dropped from helicopters. It's only from '86 onwards that we see development of offensive doctrine to use chemical weapons. And in 1988 we see really successful use of that against Iranian and Kurdish forces.

So to conclude, I would say terrorism with chemical and biological weapons is technically possible. However, I would say that the terrorist organization seeking chemical and biological weapons will always face very high technical and organizational problems with respect to developing and using these weapons.

The reasons why are, first of all, dependency on outside sources for equipment and compounds. The second element is that the armament dynamic, the process of acquiring these weapons and integrating it into some form of doctrine is always conducted in total illegality. This is a major impediment; you have to hit it from law enforcement agencies. Most likely, the production would be small and the output will be low grade. And dissemination devices which are the greatest technological challenge to anybody seeking such weapons will be far from optimal.

There is a further element which complicates the quest of terrorist organizations to get these types of weapons, and these are the international disarmament treaties. One should not underestimate the importance of the Chemical Weapons Convention and the Biological and Toxin Weapons Convention, however imperfect the latter arrangement is.

The Chemical Weapons Convention first of all requires all state parties to destroy their chemical weapons. Which means that leakage from arsenals into the hands of terrorists will be eliminated within a relatively short span of time. The

destruction deadlines within the Chemical Weapons Convention are ten years, starting from the 29th of April '97 when the treaty entered into force, and the possible extension of five years if there are technical problems in destruction.

Secondly, each state party is required to ensure that nobody, individual, organization, company, whatever, undertakes any activity which is in violation of the convention. This means a state becomes responsible to see to it that no organization, whether terrorist or otherwise, begins to produce chemical weapons. This is a pretty clear commitment and it's one of the fundamental pillars of the treaty. And furthermore, it must enact domestic legislation and penal legislation to enforce that particular commitment. So even states, I mean many partners of the United States, the United States has always been somewhat more involved in promulgating such laws to deal with crime, terrorism and so forth, but many of the European states have now been forced to enact similar legislation.

The Biological and Toxin Weapons Convention together with the Chemical Weapons Convention – industry is very much involved in these treaties. There is control of the industry; they have reporting requirements which means they become much more aware of the security concerns of the activities they are involved with.

So you will get after a certain while, as the treaty is implemented, some form of self-regulation whereby the industry will start to realize well, that individual, that group is asking for that particular chemical or pathogen, something is fishy here and they start reporting it. And I believe in the United States this is already beginning to happen, that CBCs and so forth start reporting when individuals or so request certain pathogens.

Then finally, and I'm going to end here, in terms of response to the attack, to potential terrorist attacks, there are perhaps two ways it might go in view of the technical organizational problems terrorist organizations are most likely to face when going with chemical and biological weapons. On the one hand, one element of association of chemical and biological weapons – weapons of mass destruction in the terrorist context – is that everybody gets focused onto the consequences of the attacks. And there is very little analysis towards understanding the motivations as

to why such groups wish to have it and the problems they will get, the kind of explanation I have given. And a lot of discussion is on consequence management.

And the tendency in such an approach in my view is we are working on the basis of worst-case scenarios. We're going to take the most toxic component and see what it can do to a potential target population. And, of course, if we use VX. and somewhere in the mind we still have the scenarios of what the Cold War must have used, blanketing a town with chemical or biological agents and then having massive numbers of casualties.

In view of what I have said, I believe either we can have on the one hand low levels of purity in agents which are disseminated in a very much imperfect way, so what we are probably going to see in such a release in my view is low level exposure to certain agents. I mean very few fatalities. Large numbers of injured people, and from that perspective what happened in Tokyo, 13 dead, 5,500 injured people, is not really an exceptional situation. I think this is very much a pattern for which we have to look.

But thinking about the Gulf War illnesses problem in the United States, United Kingdom, and some other European states, whereby we cannot say whether exposure, low level exposure, to certain toxins are the cause of these illnesses, or we cannot say they are not the cause, that confusion remains. I think a lot of research groups have to go into that, and the research is extremely limited so far to low level exposure of highly toxic chemicals.

The other alternative is that perhaps a number of groups might not go for the top range chemical and biological warfare agents, but why not go for the first generation, the bronze technology so to speak, in the chemical and biological warfare agents? Why not chlorine, phosgene whatever? Phosgene was the killer agent in the First World War. I mean phosgene is part of industrial processes worldwide. You use it in the dye industry, you use it to manufacture certain synthetic goods. There is trade in phosgene, large volume production worldwide. So obviously for a group it requires a lower level of technology to develop and acquire phosgene and just put it into a building ventilation shaft, whatever you wish to do. The psychological effect will always enhance that.

## ABOUT THE CENTER FOR TERRORISM STUDIES AT THE POTOMAC INSTITUTE FOR POLICY STUDIES

### ***Purpose and Scope***

Terrorism has been a permanent fixture in human history. It is evident that the second half of the twentieth century marks a new “Age of Terrorism”, with all of its frightening ramifications. In contradiction with older precedents, modern-day terrorism is widespread, institutionalized, technologically advanced, and global in its consequences. Raising the stakes of this challenge is the proliferation of weapons of mass destruction. This alarming and dangerous trend increases the potential for “super-terrorism” – biological, chemical, or nuclear violence.

Hence, there exists the need to educate policy-makers, and the public in general, on the nature and intensity of the terrorism threat in the twenty-first century. As a member of the academic and research community, the Potomac Institute for Policy Studies has an intellectual obligation, as well as a moral and practical responsibility, to participate in the international effort to arrest the virus of terrorism.

The purpose of the Center for Terrorism Studies is four-fold:

**First**, to monitor current and future threats of terrorism;

**Second**, to develop counter-terrorism strategies on governmental and non-governmental levels;

**Third**, to effect continual communication with policy-makers, academic institutions, business, media, and civic organizations at home and abroad; and

**Fourth**, to sponsor research programs on critical issues and share the findings with the policy-making community and general public.

### ***Programs in 1998***

Established in 1998, the activities of the Center for Terrorism Studies are guided by a Standing Group on Terrorism consisting of two dozen academics and professionals. This group assesses current and future trends and offers recommendations for study and research on governmental and non-governmental responses to terrorism – both on conventional and unconventional levels.

Briefing to the Defense Science Board on Biological Terrorism **June 10, 1997**

Conference on “Countering Biological Terrorism: Strategic Firepower in the Hands of Many?” **August 12-13, 1997**

Seminar on “Cyber-Terrorism and Information Warfare: Threats and Responses” **April 16, 1998**

Seminar on “Emerging Threats of Biological Terrorism: Recent Developments” **June 16, 1998**

National Press Club Briefing on “Terrorism: Current and Future Trends” **August 28, 1998**

Congressional Briefing on “The Increasing Threat of Terrorism” **October 7, 1998**

Roundtable on “Biological Terrorism: Political and Legal Responses” **October 8, 1998**

### ***Cooperation with Other Institutions***

The Potomac Institute for Policy Studies’ Center for Terrorism Studies has cooperated with many institutions, including the Terrorism Studies Program at the George Washington University; the Inter-University Center for Terrorism Studies; Sandia, Los Alamos, and Lawrence Livermore National Labs; and the Stockholm International Peace Research Institute (SIPRI).

### ***Other Publications***

Proceedings Report from Seminar on “Cyber-Terrorism and Information Warfare: Threats and Responses” **April 16, 1998**

Proceedings Report from Seminar on “Emerging Threats of Biological Terrorism: Recent Developments” **June 16, 1998**

### ***Staff***

**Professor Yonah Alexander** Director, Center for Terrorism Studies, and Senior Fellow, Potomac Institute for Policy Studies

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