

## **Politics and administration during a 'nuclear-political' crisis** *The Chernobyl disaster and radioactive fallout in Germany*

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**Abstract.** How do public agencies and governments cope with large-scale hazards if they cannot rely on specific laws, previous experience or governmental directions. National and local authorities in West Germany were completely surprised by nuclear fallout from the Chernobyl reactor blaze in 1986. This article describes and analyzes local, regional and national administrative reactions. Attempts by local and state administrators to preserve their freedom of action were confronted with national-level attempts to centralize and coordinate crisis decision making. Many local and regional bodies had to cope with citizen protests and attempts at self-regulation organized by autonomous radiological experts and amplified by the mass media. There was a marked lack of uniformity in government responses to the crisis. This was only in part due to the pervasive uncertainty and the lack of preparedness. Problems of inter-administrative coordination always occur when decentralized political responsibilities meet with geographically extensive threats.

The paper is commented on by Klaus König, professor of Government and former advisor to the West German chancellor.

### **Introduction**

On Saturday 26 April, 1986, the fourth block of the Chernobyl nuclear power plant, 120 km north of the Ukrainian capital Kiev, got out of control. The reactor building exploded and the reactor-core melted down during the following days. Hundreds of tons of radioactive graphite-dust were released. They were thrown out several kilometers into the atmosphere and spread over the whole world.

This article discusses the effects of nuclear fallout from Chernobyl on politics and policies in West Germany. It applies a re-constructive approach based on a documentary case study. The data were drawn from official sources, a specially designed survey and a series of interviews.<sup>1</sup> Various decision points will be identified and alternative crisis-management options discussed when held appropriate. Special attention will be given to lower administrations and their relations to state and federal authorities. One can find a multitude of reactions among the 11 states and many lower administrations of West Germany. This report covers only a sample of them. It concentrates on the events at Bonn (the federal capital), at Stuttgart (the capital of the state of Baden-Württemberg) and at Constance, a regional center in southern Germany, which was particularly hard hit by nuclear fallout (Figure 1).<sup>2</sup>

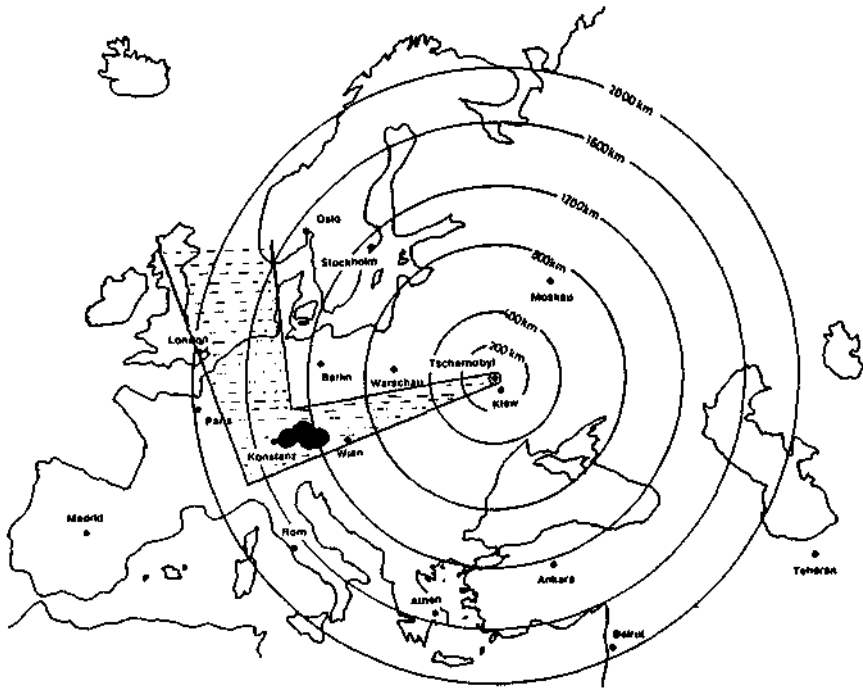


Figure 1. Distances from Chernobyl and trajectory of nuclear fallout.

Note: The nuclear-fallout trajectory which started in Chernobyl on 27 April, 1986, reached southern Germany in the afternoon of 30 April. Earlier trajectories crossed Poland and reached the eastern parts of Scandinavia.

### The problem: nuclear fallout from Chernobyl

As a radiometer reported extremely high amounts of nuclear air contamination at Regensburg in northern Bavaria, meteorologists at the *German National Weather Office* were irritated by "unreliable measurement devices". This occurred in the early morning of Tuesday 29 April, 1986. Meteorologists had actually been expecting increased levels of radioactivity for some days, since a nuclear accident had been reported in Chernobyl, Russia, 1,500 kilometers away. Because of the considerable distance and the latest soothing news from Moscow they were not all that worried. Official reports from Moscow claimed that "some mishap" had taken place at the Chernobyl nuclear power plant on Saturday, 26 April, and that the situation was under control. In the afternoon of 29 April the *Federal Minister of the Interior* in Bonn, Friedrich Zimmermann, stated, after a meeting with the *Commission for the Protection from Radiation* (Strahlenschutzkommission): "There is no

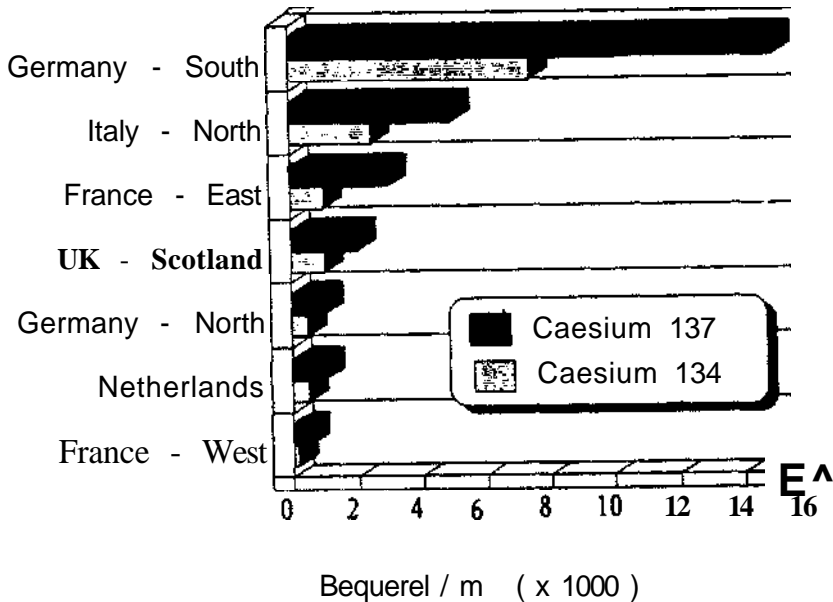


Figure 2. Radioactive fallout in Europe after "Chernobyl" accident. Total ground deposition, Bequerel/m<sup>2</sup> (representative values).

Source: M. Morrey et al., A Preliminary Assessment of the Radiological Impact of the Chernobyl Reactor Accident on the Population of the European Community, Brussels 1987 (CEC contract number 86398).

danger for the Federal Republic of Germany. Chernobyl is 2,000 kilometers away." Later on Zimmermann got into slight trouble for underestimating the danger and overestimating the distance.

Actually, a day later South Germany was, compared to the rest of Western Europe, most severely affected by radioactive fallout from Chernobyl (see Figure 2). Total ground deposition was more than ten times above the normal level. Heavy rains had carried particles of radio-nucleids: jodite 131, tellurium 132, jodite 132, barium 140, lanthanum 140, caesium 134 and caesium 137, and ruthenium 103 in particular. In several districts and cities nuclear air radiation was higher than the German *Decree on Radiological Protection* (Strahlenschutzverordnung) allows for nuclear plants and laboratories.

### Legal and institutional dilemmas

To apply the existing *Federal Decree on Radiological Protection* would have meant that cow-sheds had to be professionally decontaminated because of

polluted milk. One major political problem was preventing lower administrations from making use of this decree, originally designed to cope with industrial-safety hazards. Simply claiming that the thresholds, laid down in this decree, were only applicable to ordinary operations in nuclear industries, would have caused some misunderstandings. Indeed, it was not easy to understand why contamination which triggers the alarm system in a nuclear power plant, should be less harmful when it occurs outside and hits large parts of the country! Actually, the majority of the population, as well as members of the non-technical staff concerned with crisis management, did not see the difference between sustained low-level radiation during normal operations of nuclear plants and potential low-level contaminations from a single nuclear-fallout accident.<sup>3</sup>

There were three factors in particular that appeared to stand in the way of taking early precautionary measures:

1. Politicians and experts - nuclear physicists and radiological biologists - had divergent notions on the nature and general impact of the fallout from Chernobyl.
2. No federal or state laws provided for the case of a nuclear contamination, originating in a foreign nuclear power plant and spreading over large parts of the country. The only available legal provisions were given by special plans for regions around domestic nuclear industries (Greifelt 1986).
3. Lower administrations and disaster-control units were not practically trained to handle such extensive nuclear problems in a consistent and cooperative manner.

Partly because of institutional and situational obstacles federal and state governments assumed a wait-and-see attitude during the initial phases of the crisis. In particular they did not issue any positive guidelines for lower-level administrative action during the first week. Local authorities were therefore left on their own and had to face a complex administrative crisis, caused by inconsistent political leadership, inadequate scientific expertise and the impact of various citizen initiatives.

One should keep in mind here that central authorities felt unable to react adequately due to a high degree of uncertainty, lack of experience and the existing legal vacuum. This means that only blind activism or the use of symbolic politics could have served as realistic alternatives for delaying tactics during the early days after the fallout.

*Decision Point 1:* Federal and state authorities assume a wait-and-see attitude.

*Alternatives:* Blind activism, symbolic use of politics or positive guidelines.

The events after the "Chernobyl" accident took their course on various levels of the governmental and administrative apparatus. Figure 3 shows the network of the main actors involved.

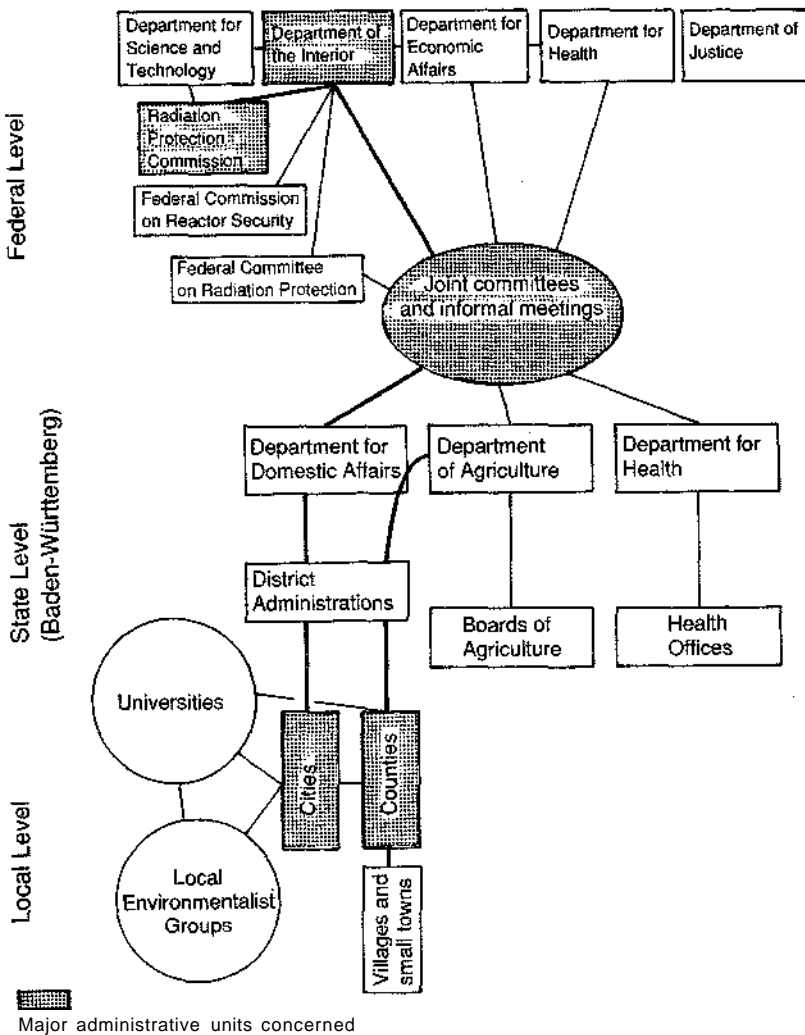


Figure 3. Network of institutional actors involved in crisis management.

### The initial perception of crisis

As early as 28 April the Federal Chancellor's Office and the Federal Ministry of the Interior called for periodic information on and measurements of nuclear concentrations by federal and state monitoring agencies. One day later the *Federal Committee on Radiation Protection* (Fachausschuss für Strahlenschutz) informed state officials of the *Joint Committee on Nuclear Energy* (Länderausschuss für Atomkernenergie).

Most of the official experts did not foresee any serious effects on the Western European population during these first days. Nevertheless, possible measures and scenarios were discussed by the state secretaries of the ministries concerned and leading officials of the *Federal Chancellor's Office*. The *Federal Commission on Reactor's Security* (Reaktorsicherheitskommission) was instructed to prepare a report on what (was assumed to have) happened in Chernobyl and what could be the consequences of this accident.

Early federal decisions concentrated on the mobilization of expertise and nuclear monitoring. Further substantial measures, i.e. the development of scenarios and preparation of disaster-protection resources, turned out to be wanting for three reasons:

- The Minister of the Interior was not only absent; he could not even be located, when the first alarming news arrived from Stockholm and Moscow.
- When he returned, he found his departments for disaster control and for nuclear security shuffling off responsibilities on each other.
- The experts within these two departments were not prepared for political crisis management, but only for technically solvable problems. Hence, they regarded the matter either as entirely spurious or only politically relevant and therefore outside their spheres of responsibility.

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*Decision Point 2:* Governments concentrate on the search for situational information.

*Alternative:* Early preparation of various scenarios and of possibly useful measures.

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The Chancellor's Office dominated crisis management until the Minister of the Interior put in a personal appearance and strongly claimed his responsibility. Maybe the Chancellor's Office would have been better prepared to cope with the political problems that emerged during the following days. Particularly its

powerful political position - West Germany has been called a "Kanzlerdemokratie" - and its past experience in coordinating many actors in times of crisis could have removed some procedural problems.<sup>4</sup> Unfortunately, Chancellor Kohl was in Tokyo, attending the World Economic Summit, and his "stable guards" failed to demonstrate authority towards other departments.

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*Decision Point 3:* Ministry of the Interior takes responsibility.

*Alternative:* Chancellor's Office keeps initiative.

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Early on 29 April the *Minister of Agriculture, Nutrition, Forests and the Environment* of Baden-Württemberg, Gerhard Weiser, ordered the few available measuring points in Freiburg, Karlsruhe, Stuttgart and in the lower Neckar-region to take radiometrical measurements around the clock and to inform the state government periodically. The *Minister for Social Affairs and Health*, Barbara Schäfer, gave orders to control milk and food. These measures were based on reasonable considerations; yet they were not coordinated with the federal and other state authorities. Thus they caused some political problems that would emerge later on and could have been avoided by a more concerted approach, possibly initiated and guided by a federal crisis committee - should one have existed.

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*Decision Point 4:* The state of Baden Württemberg switches to stand-by position.

*Alternative:* Concerted federal crisis management guided by central authorities.

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In the afternoon of 29 April the assistant editor-in-chief of the regional newspaper *Südkurier*, sited in Constance, Gerd Appenzeller, asked the physics department of the University of Constance for some information on nuclear reactors of the Chernobyl type and possible health risks from nuclear contamination. Gerhard Lindner, assistant professor at the physics department, could immediately provide an answer. He and his colleagues had already collected some information on the Chernobyl reactor at the university's library and they had discussed possible scenarios of the events there; however, they did not seriously believe there would be any higher nuclear contaminations in Constance at that time. Appenzeller, who was rather interested, but felt himself a complete ignoramus in those matters, asked them whether they could write an

article on the events and possible impacts of the Chernobyl accident for the next issue of the *Südkurier*.

The decision of many journalists and experts to opt for a more independent investigative approach and thus to start collecting additional information and measurement data on their own changed the political arena dramatically. Federal and state authorities lost their ability to define the situation. This resulted in provoking political protest, distrust in official reports and an increasing interest in non-governmental sources of information.

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*Decision Point 5:* Autonomous experts form an alliance with the press.  
*Alternative:* Intensified and more credible governmental information-strategies.

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On Wednesday, 30 April, the *Südkurier* appeared with an editorial written by Gerhard Lindner and one of the heads of the Constance University's physics department, professor Recknagel. Lindner, who is an expert on reactor technology, estimated that hundred of tons of radioactive graphite-dust must have been thrown into atmospheric trajectories and were circulating around Europe.

In contrast to that, the news from Bonn, the federal capital, was once again soothing. Nobert Schäfer, deputy press officer of the government, reported to the media (Husemann 1986: 83):

The federal government states that there is not and will not be any danger for the Federal Republic of Germany. According to all the information at hand, health hazards for the inhabitants of the Federal Republic of Germany are excluded.

Nevertheless, permanent working groups were established at the Federal Ministry of the Interior and Ministry for Foreign Affairs. Their tasks was the gathering and passing on of information. People visiting the USSR were strongly advised not to travel to the area where the accident had occurred. Consequently, nobody any longer believed the stories from Moscow or East Berlin of a minor incident (what in German was euphemistically described as a mere "Havarie") at Chernobyl. The *Joint Committee of the State Environmental Departments* (Umweltministerkonferenz der Länder) was informed of the federal initiatives. Some committee members proposed to use also mobile measurement units of the armed forces and civilian technical emergency corps for the recording and control of domestic nuclear soil contaminations in the



event of major fallouts. However, this proposal was rejected for legal, political and psychological reasons.

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*Decision Point 6:* Bonn stresses problems abroad and rejects additional domestic initiatives.

*Alternative:* Precautionary mobilisation of domestic measurement units and emergency services.

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The federal government tried frantically to convey the idea that it had all the technical devices, expertise, organizational capacities and political skills which were necessary to master any conceivable situation. The authorities in Bonn told the press there were no problems and, should they arise, than there would be a lot of solutions to choose from.

In the afternoon of 30 April the *Prime Minister of Baden-Württemberg*, Lothar Späth, met state ministers and officials of three departments: Agriculture, Nutrition, Forests and the Environment; Health and Social Affairs; Interior. After discussing federal policy, they decided to establish *apermanent observation group* at the Department of Agriculture. Späth appointed this department's minister, Gerhard Weiser, as the permanent observation group's director.

The permanent observation group in Stuttgart was bound by the decision of the ministers not to apply the 'disaster laws'. Since the experts expected only a minor contamination at worst, the Ministry for Health issued a warning against the use of jodite pills. In a first press release the Ministry of Agriculture informed the public of a slightly above-normal level of radioactivity, which was said to be absolutely harmless and did not warrant any special precautionary action.

We have observed similar patterns of crisis management by the public-administration apparatuses of various other states. Thus, a common reaction was to establish permanent observation groups. On the other hand, in all the states initiatives that had been taken so far, were based on the assumption of minor fallouts. Hence, state authorities rejected the idea of falling back on 'disaster laws'. At the same time, less wide-ranging and drastic plans and regulations had not been prepared for near-disaster emergencies. What has also struck us was the lack of precautionary technical provisions for vertical communication with lower administrative units.

In Baden Württemberg the state authorities' permanent observation group had no access at all to the emergency communications network of the Ministry of Interior, which was operated by the police services. According to one of our

interviewees, this would prove to be a major handicap, especially during the following weekend.

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*Decision Point 7:* State government does not opt for an emergency communications strategy.

*Alternative:* Allowing the "Chernobyl" observation teams access to the police services' emergency communications network.

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With the prospect of an extended weekend - as 1 May was a national holiday and, like most people, they had an extra day off on 2 May - the state ministers left their offices on 30 April just two hours before torrential rains occurred in southern Germany, Austria and parts of Switzerland. Gerhard Lindner and his colleague Manfred Deicher at the *Constance University's physics department* were among the first to measure the nuclear soil contamination during that "great rains" episode with a Geiger counter. Their Geiger counter indicated high nuclear decomposition rates outdoors and stopped squeaking as they passed underneath the roof of a bicycle shack in the courtyard of their institute. Precise measurements revealed that the variation of overall nuclear ground exposure between indoors and outdoors ranged within a factor of 30, and that air radiation remained comparatively low.

In the early morning of 1 May Lindner was rather shocked when he noticed that among several short-living nucleides, such as jodite 131 and caesium 137, some heavier isotopes were also identifiable in a number of food samples. He detected caesium 137 with a half-life of 30.2 years and strontium 90 with a half-life of 28.5 years.<sup>5</sup>

Thursday, 1 May, was a wonderful sunny day and a lot of people had gone for a walk and were playing on slightly radiating meadows. Some tilled their gardens, which were covered with an invisible thin sediment of decomposing nuclear isotopes, and children romped through puddels of highly contaminated rain from the day before. As early as 10:00 a.m. nuclear air-exposure in Constance reached values ten times above normal. Shortly afterwards physicists detected a tiny single nuclear dust particle from Chernobyl on a withered leave with a radiating activity of some thousands Becquerel.<sup>6</sup>

The Constance University's team of physicists had already discussed several ways to reduce the risks of nuclear contamination. So, it was quite easy for them to sketch a list of recommendations, which Appenzeller of the *Südkurier* promised to publish the next day.<sup>7</sup>

Amongst the population the Chernobyl-fallout problem led to a variety of reactions. Large parts of the general public felt helpless. The activities of

*environmentalist groups* increased. Local parties released a series of statements on this issue. At this stage *experts* and *journalists* decided to recommend particular kinds of nutrition in order to reduce the biological impacts of nuclear contamination. Sometimes this caused substantial discontent in certain quarters, such as market gardeners, fishermen and shopkeepers. At the level of the local administration various agencies, like school boards or offices for public gardens and play grounds, cautiously began to take their own initiatives. These were often inspired by newspaper and television reports, and they were condoned by city councils and mayors. Among the first more authoritative actions one finds, e.g., the establishment of advisory groups, "Chernobyl" hot-lines for the general public, the prohibition of sporting events and open-air festivals (Czada and Drexler 1988). Generally speaking, one can say that lower authorities felt forced to intervene, regardless of the real amount of contamination. In several cases they even implemented emergency measures without any reliable measurement results.

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*Decision Point 8:* Under the pressure of the population a number of local authorities decide to act.

*Alternative:* Lower-level authorities remain passive and deny any competence in these matters.

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While the press and local experts played a crisis management role in Constance, the permanent observation group in the state capital, Stuttgart, as well as the technical advisors and politicians in Bonn, did not believe the reports that came from the south. Stuttgart and its surroundings had been widely unaffected by the rains of Wednesday night; but increased levels of nuclear air and soil exposure were reported for the whole region of Upper Swabia and the Lake of Constance (see Figure 4). Thursday afternoon contaminations of 50,000 Becquerel ground deposition per square meter were recorded in the town of Bad Wurzach, and journalists reported that the mayor of the nearby city, Ravensburg, was going to employ the local CBR-platoon<sup>8</sup> for further measurements all over the area.

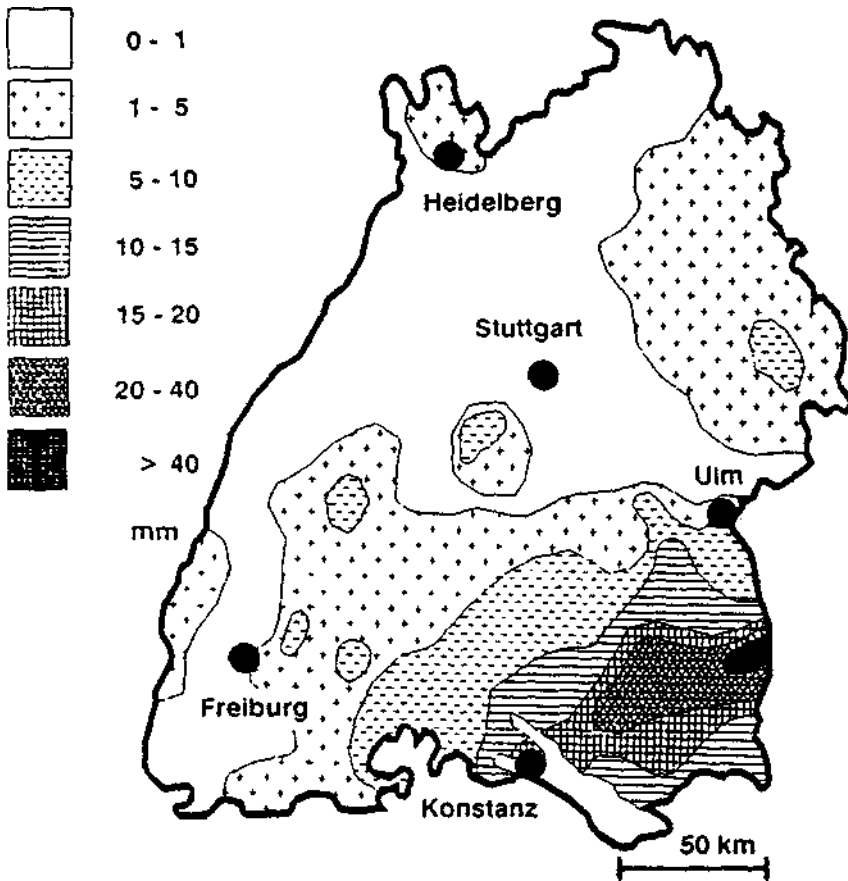


Figure 4. Regional dispersion of contaminated rainfalls in Baden-Württemberg (30 April, 1986).

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*Decision Point 9:* State government sees no need for measurements in contaminated areas.

*Alternative:* Drawing up a state-wide measurement plan in collaboration with local authorities.

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The logbook of Constance's fire brigade specifies that the first mission of the city's CBR-platoon took place on Wednesday, 30 April, at 16:30. One may assume that this was the very first local CBR-platoon mobilized during the "Chernobyl" crisis. The commander of the brigade, Santo, had ordered that radiological measurements be taken after an incident in a private isotope-laboratory. The alarm systems there had been activated when an employee

wanted to enter (!) the laboratory. To be on the safe side, a manager reported the incident to the local fire-brigade and to the *County Agency for the Protection against Disasters* (Katastrophenschutzbehörde). Due to this incident county officials - among whom commander Santo, also a part-time member of the County Agency for the Protection against Disasters - felt urged to mobilize the CBR-platoon.

### **Uncertainty over thresholds**

The County President of Constance and, as such, also the head of the county disaster protection unit was Robert Maus. He had the reputation of being a courageous and sometimes autocratic person. He was also a prominent member of parliament in the state of Baden-Württemberg and sat on the parliamentary security-council, the so-called "Three-men-committee" which controls secret matters at state level, such as civil-emergencies precautions. In that capacity Maus had suggested to amend the state's disaster law some months earlier, but his proposal was voted down. It appears now that during the "Chernobyl" crisis he has acted according to the recommendations and guidelines contained in this proposal. Indeed, afterwards he used the "Chernobyl" crisis as a loophole to reintroduce his bill and eventually the parliament of Baden-Württemberg amended the disaster law following Maus' original suggestions.

The large market-gardens on the island of Reichenau, nearby Constance, are traditionally a mayor supplier of fresh vegetables and salads in Munich, Stuttgart and other southern metropolitan areas. It had been planned that their marketing-season would start on 5 May. After personally inspecting a number of horticultures on 2 May, County President Maus got a notion of the problems that would arise and he decided to establish a *local expert committee*. This way he hoped to get an increasingly muddled situation under control. He thought of two and a half million heads of lettuce waiting to be cropped and afterwards front page stories in all the newspapers on the risk that they may have been heavily contaminated. Hence, without further ado, Maus invited Lindner and Recknagel to take part in a meeting of officials from several administrative agencies, police services, fire-brigades, and the press, the afternoon of that same day - a group which from then on would act as the county's crisis management team.

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<i>Decision Point 10:</i>	Maus calls in academic experts and establishes a crisis management team.
<i>Alternative:</i>	County authorities do not get involved in disaster management.

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When this newly constituted county's crisis management team met on 2 May they discussed immediate measures to be taken, as well as the allocation of existing technical and informational resources, and they drew up a press release.

The physicists, professor Recknagel and Dr Lindner, gave an account of the radiological situation. For his part, the commander of the local fire-brigade reported somewhat lower levels of nuclear contamination than the physicists. Most of the officials warned not to overestimate the threat of increased radioactivity. Their advice was to keep people calm by taking no precipitate action. Uncertainty over appropriate thresholds complicated the decision making. The physicists suggested taking the figures laid down for jodite 131 in the *Federal Decree on Radiation Protection* as a basis. Considering the differences in people's lifestyle and diet, it was impossible to apply these figures directly, but as a "rule of thumb" the physicists claimed, e.g., 100 Becquerel/liter to be the appropriate threshold for milk.

Generally speaking, the members of the crisis management team in Constance preferred a cautious path of action, not so dissimilar from the state and federal strategies. Nevertheless, they tried to manage the "milk" issue, which was seen as a major problem for the local population. At the same time they hesitated to hurt the interests of the farmers at Reichenau, not in the least out of fear for possibly huge compensation claims afterwards.

That same Friday afternoon, 2 May, the Ministry of the Interior of Baden-Württemberg ordered the withdrawal of local CBR-platoons. This was the first governmental instruction which reached counties and major cities after the fallout. The teletype (with the file reference "Tschernobyl/1") said:

... the lower disaster-protection offices are to be instructed not to use units and equipments from the public disaster-protection service, and to withdraw units that are already operating. (...) Additionally, measures by disaster-protection offices (including any eventual orders of a special emergency agency) are only to be taken on the Ministry's instruction.

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*Decision Point 11:* Baden-Württemberg's Ministry of the Interior orders to withdraw local CBR-platoons.

*Alternative:* Encourage autonomous local measurements, and collect and evaluate their results.

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After receiving this order via the *district authorities* of Tübingen und Freiburg - that act as intermediaries between the Ministry of the Interior and the lower territorial-administration apparatus in south-west Germany - officials from Constance, Ravensburg and many other cities tried to phone several departments in the state's capital, Stuttgart, without any success. County and city officials questioned the sense and purpose of these instructions, and only a few mayors and county presidents obeyed them.<sup>9</sup>

The state government's order to withdraw CBR-platoons was an attempt to coordinate and control local activities. One may at least doubt whether this was a good decision, because those county and local authorities who had so far remained inactive, interpreted this as a justification for their passivity, and most of the others simply did not follow it. Hence, the administrative crisis continued and new problems in terms of costly short-circuits and conflicts arose. An alternative could have been to collect local data, interpret them, and then tell the press that some of these measurements and initial interpretations were wrong. It is undeniable that there would have been some truth in such a statement; on the other hand, it would also have demonstrated the inefficiency of the disaster-protection system. Moreover, all the volunteers in local fire brigades, who have always been honoured for their public spirit, might have been deeply hurt.

Meanwhile, discussions on thresholds for food contamination characterized the events in Bonn, the federal capital, on 2 May. There was a special session of the *Radiation Protection Commission* in the morning. After a general estimation of the radiological situation, the commission recommended a threshold of 500 Becquerel per liter milk for jodite 131. Subsequently, the federal secretaries of state discussed the consequences of such a recommendation at their meeting at the Department of the Interior. For them it was obvious that political and administrative constraints made it extremely difficult to issue thresholds officially. What had to be avoided at all cost were political conflicts over thresholds which could not be controlled effectively anyhow. Additionally there was the problem that the states could not be legally forced to implement such a decision. On the other hand, doing without national thresholds would have meant that single states - especially Hesse with a Minister of the Environment from the Green Party - or even counties and cities could take the lead by issuing their own thresholds. It was for these

political reasons that the secretaries of state did finally agree to follow the Radiation Protection Commission's recommendation. The decision on thresholds was thus also meant to act as a clear signal to the states and other territorial authorities not to undercut the federal strategy.

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*Decision Point 12:* Federal commission recommends threshold for the contamination of milk.

*Alternative:* Authoritative prescription of thresholds or non-intervention at central level.

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Newspapers were full of the "Chernobyl" crisis on Saturday, 3 May. In the early morning the Radiation Protection Commission met once again. It discussed further details of the decision on the threshold for milk, which was above the thresholds already applied by several local authorities and the governments of Hesse and Berlin. Afterwards the secretaries of state of the various federal ministries concerned also decided to expand import restrictions.

In Baden-Württemberg the working group at the Ministry of Agriculture suggested to restrict cattle-grazing in the southern regions of Upper Swabia, around the Lake of Constance and in the southern parts of the Black Forest. Thereby they hoped to reduce contaminations of milk and meat. Minister Weiser advocated such a measure. He said that this was the only way to minimize the contamination of food and prevent serious problems that could arise from milk exceeding the existing thresholds. These warnings circulated via the media and they were even heralded by priests during the Sunday services in the churches of Upper Swabia. Surprisingly enough, no grazing cattle were seen north of the Swiss border during the following days. Later the restriction on cattle-grazing was seen as a successfully implemented official measure - effective, even though it had not been backed by any legal sanctions or the threat of police intervention. Indeed, patrol cars of the police roamed across the southern rural districts, but only to record how the situation evolved and morally persuade farmers.

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*Decision Point 13:* State government restricts cattle-grazing.

*Alternative:* Let people and cattle eat whatever they want, even if their food may be contaminated.

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On Saturday, 3 May, Lindner and Maus had a telephone conversation and they agreed to inspect the nearby dairy in Radolfzell as well as to implement rather low levels of radiation for marketed milk products. Samples were taken at the dairy and analysed with a gamma-spectrometer at the university's physics department. County President Maus promised to persuade the dairy not to process supplies of milk with contaminations exceeding 100 Becquerel per liter. And, indeed, during the following days the dairy stored a few tanks of milk for curds and cottage cheese that turned out to be highly contaminated.

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*Decision Point 14:* County administration introduces control of milk and dairy products.

*Alternative:* Waiting for the federal and/or state government's instructions on how to manage this problem.

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All these initiatives were based on informal voluntary agreements between County President Maus and the regional dairy. To negotiate similar agreements with the market gardeners of Reichenau was seen as a critical issue. Measurement problems,<sup>10</sup> fears of possible compensation claims and a resistant market-gardeners' co-op made it very difficult to reach voluntary agreements in this sector.

### **The bureaucratic apparatus is overheating**

During the weekend, 3 and 4 May, increasing soil contaminations were reported, not only from the south, but also from the whole territory of the Federal Republic. Discussions in Bonn centered around the question whether the marketing of green vegetables should be restricted or not. The government of Berlin was the first to strongly insist that such a measure be taken. On Sunday the Radiation Protection Commission suggested to apply a threshold of 250 Becquerel/kg for green vegetables. Subsequently, federal authorities requested the states to limit the marketing of green vegetables from 5 May onwards.

The control of contaminated food raised serious questions: who would be responsible for carrying out official measurements; who should be allowed to confiscate goods, where and on what legal grounds? In Baden-Württemberg controls were organized as follows. Mobile measurements were to be directed by local sections of the State Board for Health (marketed goods) and State Board for Agriculture (field crops). Detailed measurements of suspicious goods were delegated to officially appointed laboratories. Rough measurements, confiscation of products for testing and coercive measures had to be

executed by the Economic Control Service (Wirtschaftskontrolldienst) of the police - on the basis of the Lebensmittelgesetz (Food Law) and several decrees on business and industry regulations. The transport of samples was the task of police couriers, including a helicopter squadron and officers of the police's Economic Control Service.

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*Decision Point 15:* State government introduces compulsory food controls.  
*Alternative:* Non-intervention or stick to mere recommendations.

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The state government's written order from Monday, 5 May, caused angry reactions amongst county and city authorities. The district administration's corresponding teletype (no. 224) arrived in Constance at 11:12. It indicated that the "radiometers 'minicont' are to be transferred to the police's Economic Control Service" and other devices "are to be kept ready - special orders will be issued with regard to their assignment". County President Maus became furious when he read this. He replied immediately to Minister Weiser: "... the above-mentioned teletype has caused absolute confusion. After six days of autonomous measurements here, should the Ministry of the Interior now control these measurements and confiscate and redistribute the radiometers to special testing teams? With the best of wills, I cannot imagine that this instruction is to be executed after informing you about the events in the county of Constance yesterday. I require prompt communication." Minister Weiser called Maus during the following day. He argued that protection from nuclear radiation has never been a communal policy task at all. Hence, county services had to act as local branches of the state administration in this case. County authorities were not even allowed to discuss and decide on this issue in any way. Nevertheless, Maus would continue to disobey the state government's instructions.<sup>11</sup>

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*Decision Point 16:* State government orders re-arrangement of measurement procedures.  
*Alternative:* State accepts division of tasks and competences.

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Monday afternoon, 5 May, the County Council met in Constance. President Maus became rather angry when members of the Green and Social Democratic parties blamed him for passivity. He replied that "It is illegal what I am doing here" and immediately left the meeting for half an hour to "fulfill tasks of

active disaster protection", according to the council's minutes. From then on a vast majority of councillors backed his approach of crisis management.

During the closed part of the meeting members of the County Council were rather shocked when they heard about extremely contaminated air-filters at the city hospital and the university. This contamination exceeded the range of the CBR-platoon's radiometers, and it was clear that the filters had to be treated as nuclear waste according to the existing regulations. Maus mentioned this in his talks with Minister Weiser, who seemed to have been surprised by those "strange incidents". Weiser and his "experts" felt helpless with regard to the air-filters problem. When the county councillors heard that, they became incensed with the state government's unpreparedness and ignorance. It appeared nobody knew how to decontaminate these dangerous materials. Therefore, the County President ordered not to enter the filter cabins until further notice.

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*Decision Point 17:* Replacement of air-filters prohibited by County President.

*Alternative:* Not to consider contaminated filters as nuclear waste.

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Through some general reorganization of measurement activities the Constance University's department of physics got an official appointment to take measurements for the state authorities of Baden-Württemberg. This meant that Lindner and Recknagel were mobilized for special duties and therefore somewhat restricted in their activities. At the same time they got official permission to continue their measurements. The state government's alternative would have been to refer to the university institute's official tasks in the fields of teaching and research, consequently banning "private" activities in its laboratories. But the physicists involved could then, of course, always have entered a protest against such a strict measure - e.g., referring to the constitutional right of freedom of research.

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*Decision Point 18:* Government incorporates university institute into measurement-network.

*Alternative:* Prohibition of activities not mentioned in the institute's official statutes.

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On Monday, 5 May, ministers of Rhineland-Palatinae (Prof. Klaus Töpfer, who later became Federal Minister for the Environment and Reactor Security) and Baden-Württemberg (Gerhard Weiser) and a high-ranking official from the Bavarian state government (Prof. Werner Büchner) met and decided on the implementation of the federal recommendations. The Hessian minister concerned, a prominent member of the Green Party, Joschka Fischer, had been excluded from this conference, although he had previously declared that he regarded Hesse as a severely hit region. Probably the later obstructionism from Hesse was partly caused by this insult. On the other hand, it was argued by one of our interviewees that the direct participation of Joschka Fischer in the meeting of state ministers on 5 May might well have heated up the discussion and thus delayed the implementation of federal measures.

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*Decision Point 19:* State Minister excluded from crisis management network.

*Alternative:* An open decision making process in which all relevant actors can participate.

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The *Parliamentary Committee of the Interior* was informed by the federal government on the same day. This was the first time that the national parliament became officially involved. At noon the federal secretaries of state in an ad-hoc meeting decided to establish an inter-departmental commission of judicial experts to handle questions on aspects of competence, legal provisions and indemnities. This was an indication that the legal dimensions of the crisis appeared so confusing that the authorities themselves did not know how to cope with these problems. The application of emergency laws was not even a rhetorical alternative: merely the thought of this worst-case option made (and still makes) politicians shudder- and, indeed, the "Chernobyl" crisis was not an emergency situation like civil war or similar threats to the social order. A more realistic alternative would probably have been to opt for parliamentary discussion and decision making. On the other hand, this may have solved some problems, but simultaneously it could also have strengthened the Green Party in parliament as well as the anti-nuclear movement.

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*Decision Point 20:* Federal inter-departmental commission of legal experts is established.

*Alternative:* Solve legal problems through parliamentary channels or application of emergency laws.

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On Tuesday, 6 May, the secretaries of state of some federal departments and state ministries, concerned with radiation protection and food controls, met in Bonn to coordinate their initiatives and political strategies. There was also a special meeting of the *Direction Centers for the Inspection of Environmental Radiation*<sup>12</sup> (Leitstellen für die Überwachung der Umweltradioaktivität) with the *Radiation Protection Commission's Committee on Radio-Ecology* (SSK-Ausschuss Radioökologie) to harmonize measurement practices, to interpret the latest results of measurements and to exchange general experiences.

In Baden-Württemberg the permanent observation group presented its first report, containing all measurement data and which all ministries had authorized to be transmitted to the lower administrations and to the public. The former received it by police couriers. Till then they had not received any official information or, in some cases, only short notes through multiple channels of communication and by a variety of governmental units.

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*Decision Point 21:* State government reports on radiological situation and the measures it has taken.

*Alternative:* To keep problems and state government's initiatives secret.

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### **Party politics and inter-departmental conflict**

Early on 7 May the *EC-Commission's decision* to restrict the marketing of milk, dairy products, fruits and vegetables, and to stop imports of meat from East European countries until 30 May, 1986, was implemented. The customs offices and economic control units of the police were ordered to take measurements of all food passing the border. That same day, at noon, some earlier German restrictions concerning the treatment and marketing of food were cancelled after a special meeting of the Radiation Protection Commission. The commission warned against making people's daily life unreasonably difficult. The Joint Committee on Atomic Energy assessed the Radiation Protection Commission's recommendations. The problem of compensations for damages

caused by governmental measures - e.g., destruction of food, restrictions on the tourist traffic to Eastern Europe, decline of sales - was one of the main topics during these discussions.

The results of the meetings of this day at federal level were based on a minimal consensus. Conflicts dominated the *Federal Cabinet*, which at the time was only a rump cabinet, since Chancellor Kohl and two of the most important ministers attended the World Economic Summit in Tokyo. The Minister of the Interior tried to keep everything under his control. This proved difficult, for the *Department for Science and Technology* had also quite some scientific expertise at its disposal and the *Department for Economic Affairs* felt bound to protect and defend the interests of the nuclear industry, which had been politically assisted since the mid-fifties. Additionally, Economic Affairs was considered a domain of the Free Democratic Party (FDP), whereas the Ministry of the Interior was led by the Bavarian Christian Social Union (CSU) and Heinz Riesenhuber, the Minister for Science and Technology, represented a liberal wing within the major coalition party, the Christian Democratic Union (CDU). At the same time there was no center of decision making, such as, e.g., a Federal Environment Department, which could have served a coordinating agency. Instead one found a multiplicity of committees, working groups, ad-hoc units and informal circles/cliques.

Generally speaking, crisis management in Bonn was more politicized than in other European capitals after the "Chernobyl" accident. This was true for all phases, but it became intensified as departments got more concerned with the issue, due to extended measures in fields like agriculture, law and justice, export and industry, research and technology, etc. Here we find some implicit institutional mechanisms and dominant attitudes which increased politicization and conflict, as well as inconsistent information policies, non-decisions and immobilism at the federal level.

Inter-party competition and electoral strategies strongly influenced the course of events in Bonn. Two state elections in Lower Saxony and Schleswig Holstein were coming up, which could change the balance of political forces fundamentally. Both of these states consist of many rural districts - and farmers have traditionally been an electorate wooed by the CDU. Therefore it was not surprising that the *Federal Minister of Agriculture*, Alfons Kiechle (CDU), and his advisors were among the first who saw an opportunity to compensate farmers for damages from radioactive fallout without offending EC-rules. In this kind of situation conflicts between departments were bound to escalate. But electoral politics - together with the fact that the governing coalition had to act quickly- also attenuated inter-departmental conflicts. One outcome was, e.g., that - although his department had initially rejected the idea, for it feared a negative effect on the budget - the *Minister of Finance*, Gerhard Stoltenberg, in the end did not oppose to additional expenditures to

pay indemnities because, being the CDU party leader in Schleswig Holstein, he was particularly afraid of electoral losses.

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*Decision Point 22:* Federal government decides to pay for damages.

*Alternative:* Turning down any compensation claim, i.e. privatizing the risks of nuclear energy.

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All the farmers and market gardeners would finally get indemnities amounting to a total of 310 million DM, which were distributed in a remarkably unbureaucratic fashion. The market gardeners' cooperative of the island of Reichenau (near Constance) got no less than 2 million DM for about 2.5 million heads of lettuce and several acres of cauliflower, spinach and radishes, which they had either to bury or destroy by governmental order (Eiermann 1987). Generally compensations for damages were based on cultivated acreage, if concrete losses could not be precisely determined. Only ten applications would remain contested by the end of 1988. The decision to bear the costs of indemnities was based on a variety of political considerations. Besides the electoral interests, already mentioned, one important argument appears to have been that not to compensate for losses, resulting from the Chernobyl fallout, would have meant privatizing the risks of nuclear energy.

### **Major factors which complicated crisis management**

To explain the West German handling of problems, caused by the fallout from Chernobyl, one has to consider the political background. Five of these political-background factors in particular should be taken into account.

1. The 'energy vs. environment' conflict became one of the most important political issues after the rise of the radical Green Party during the 1980s. It has been a central element in West German party politics and even at the public-administration level proves to be a factor with a particular relevance. The latter is clearly demonstrated by the network and activities of more than 25 competing administrative units concerned with nuclear regulations (Deiseroth 1986).
2. West German federalism is characterized by mixed competences and joint decision making in industrial, environmental and nuclear policies. One finds strong traditions of both administrative autonomy of the states and federalist political integration. However, the structure of "cooperative federalism", as it is called, interferes with a competitive party system- since

a number of states are traditionally governed by the Social Democratic Party (SPD), some by the Christian Democratic Union (CDU), and others are electorally more unstable. This system of cooperative federalism relies heavily on procedural and distributional rules, because its decision-making capacity is based on consensus building between autonomous, often competing and, at the same time, interdependent actors (Lembruch 1986). That has led to the establishment of numerous committees and other bodies for interstate or federal-state coordination in specific sectors. The mix of cooperation and competition between states has proven to be effective in some instances, e.g., industrial policies (Czada 1990), but our present analysis reveals that it does not work when quick decisions are required.

3. Scientific expertise is also heterogeneously organized. Universities and research institutes operate rather autonomously; nevertheless, they are connected with politics by an overlap between their activities and inter-party conflicts. For instance, states with Social Democratic governments have often preferred scientists who were/are critics of the indiscriminate use of computer technology (e.g., as far as the development of data networks is concerned), monetarism or nuclear energy, whereas Christian Democrats have established research laboratories that are active in and should promote precisely these same areas. Moreover, many leading natural scientists have very close links with or are employed by industrial companies. This is also true for the expert members of such institutions as the Radiation Protection Commission.
4. The public administration is in the hands of the states. As most states have been ruled by the same parties for a long time, patronage appears to be a widespread practice. But, although state administrations are often seen as being under the control of certain parties, their professional staff feels bound to bureaucratic traditions and considers itself as part of a strong governmental apparatus which watches over the public interest. This is especially true for administrations with a Napoleonic or Prussian heritage, as in the south and in the former Rhine-provinces (Derlien 1987).
5. Additionally, most Germans assume that the government or public bodies are responsible for taking care of all kinds of collective threats - even those of everyday life. At the same time they expect that governmental policies be clearly legitimized, so that administrations like to rely on formal rules in order to guarantee this legitimacy. The events after the "Chernobyl" accident showed that in crisis situations, involving disruptions of the population's everyday life, the authorities had tremendous problems, since they could hardly fall back on their usual formal type of legitimation.



What are the lessons to be drawn from the experiences described here?

To master geographically extensive pre-disaster events requires a careful assessment of vertical links between different levels of the public-administration apparatus. In that kind of situations, when nobody knows whether or not, where, and with which consequences a disaster will occur, 'social perplexity' is extremely high. And - important to know - 'social perplexity' is mainly handled at the community level, since the majority of the population only has access to local politicians and authorities. This means that local administrations are fully exposed to the confusion of people experiencing extreme fears and feelings of insecurity. By comparison, administrations at a higher level are spared such a direct confrontation with distressed and frightened citizens, and thus find themselves in a more protected position. Hence, it was wrong to assume that regional, national or international extensions of a disaster merely required an appropriate level of administrative centralization. Such crises have certain dimensions which can only be faced locally.

Of course, the various spheres of administrative competence should be properly attributed. And there should also be a central coordinating agency. Indeed, one major problem after the "Chernobyl" fallout was the absence of a specialized federal department which could have transposed the politics of muddling-through into administrative rule-making and practices of coordination.<sup>13</sup>

Crisis decision making cannot succeed without first clearly and firmly delineating as well as adjusting and balancing central and local competences. This seems to be a prerequisite for further actions in order to avoid misunderstandings and conflicts. Just to control or even limit information flows and centralize the authority to decide and act - a common attitude of disaster-managers (Rosenthal and van Duin 1986:10) - would be counterproductive in uncertain situations where no reliable solution to problems is available.

## Notes

1. The research grant was provided by the University of Constance's research fund (FP10/87). I am indebted to those officials who readily gave me the information I asked for. Besides informal talks at the local level, major interviews took place with representatives of the former Ministry of Agriculture, Nutrition, Forests and Environment Protection of Baden-Württemberg and the Federal Ministry of the Interior in Bonn. Alexander Drexler and Karin Tritt contributed particularly helpful comments. Special thanks are due to Uwe Brendle, whose broad contacts and resourcefulness allowed deep insights into local events. Bert Pijnenburg gave valuable hints on possible alternatives of crisis decision making. For reason of space only major events could be reported there. Please contact the author for a complete description.
2. The most urgent problems after the fallout occurred during the 10 days between 28 April and 7 May, 1986. They were located within and between federal, state and local administrations. The names of individual actors have not been aliased here as far as elected politicians and heads of departments are concerned. This appears to be a prerequisite for a substantial

discussion and favours further cumulative research on these events. At the same time no personal blunders are being reported here. In fact the course of events seems to have been determined primarily by systemic variables, an inconsistent complex of rules, and institutional failures.

3. The cumulative biological impact of nuclear contaminations means that the duration of exposition is highly significant with regard to individual health risks. Duration in its turn depends on the half-lives (see note 5) and portions of specific radionuclides. To estimate the effective health risks one has to consider the types of radiation - alpha, gamma, beta - and different ways of exposition - environmental radiation or incorporation of isotopes. Incorporation depends on nutrition; transfer-rates of specific plants and meat determine the contamination of food. The air-radiation following nuclear fallout is influenced by weather conditions and the volatility of specific isotopes. Children appear to be more affected by evaporated air-radiation since their bodies and respiratory organs are nearer to the ground. The complex radio-biological processes within living organisms are still widely unexplored, especially when it comes to lower levels of contamination.
4. In fact the Chancellor's Office had been the coordinating agency during national crises in the recent past - e.g., when terrorists kidnapped leading businessmen or hijacked an aeroplane.
5. Half-life: the amount of time it takes a substance to lose half of its radiation intensity. This is used as a standard of measurement because the decaying process may last for an infinite number of years.
6. Those particles were also found in Sweden. Physicists of Constance analysed 15 of them, which could be detected in filters of air conditioning systems, haystacks and dustbins (Lindner and Recknagel 1988). Some months later they found some hot particles on tea-leaves from Turkey.
7. For instance they suggested:
  - not allowing children to play in sandpits,
  - not to drink rain water,
  - to wash vegetables before consumption,
  - to shower children who had been outdoors.
8. In larger cities the Chemical-Biological-Radiological (CBR) platoons serve as divisions of the local fire brigades. They are responsible for protective actions and measurements in case of chemical, biological and radiological hazards.
9. During those days County President Maus from Constance has denied that any imperative instructions were ever given and some of his colleagues, who were interviewed by a team of my students, said that such documents could easily get lost in this peculiar kind of situation...
10. In contrast to milk, vegetables had to be prepared for measurements with a gamma-spectrometer. Even the physicists did not really know how reliable this type of measurement was.
11. Maus was quite conscious about the possible consequences of his "illegal actions". He strongly feared to get into all kinds of judicial and political trouble afterwards. This must still have been on his mind one year after the "Chernobyl" crisis, according to personal correspondence with the author.
12. The top departments of various agencies that were officially involved in environmental radiological measurements, such as the National Weather Office and sections of the eleven states' Nuclear Regulation Bureaus.
13. Some weeks later, as a direct consequence of coping with the "Chernobyl" crisis, a Ministry for the Environment and Reactor Safety was established.

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