



Rheinland-Pfalz

AUFSICHTS- UND
DIENSTLEISTUNGSDIREKTION

EMERGENCY RESPONSE FOR THE AREA SURROUNDING THE CATTENOM NUCLEAR POWER PLANT

Information for the population in Rhineland-Palatinate



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CONTENTS

Introduction.....	3
General information about the Cattenom nuclear power plant...	3
What could happen?	5
What effect does radioactivity have?.....	6
Information about civil protection in Rhineland-Palatinate for the area surrounding the Cattenom nuclear power plant	7
General Map.....	9
Civil protection measures	10
References	12

Introduction

Together with the district administration of Trier-Saarburg and the Saarburg association of municipalities the Federal State Government of Rhineland-Palatinate has been preparing civil protection plans ever since the commissioning of the Cattenom nuclear power plant in France. The goal is to inform the population as quickly as possible about any accident at the Cattenom nuclear power plant and to protect and help the population.

The planned safety measures apply particularly to the area within 25 kilometres of the Cattenom nuclear power plant, in accordance with the uniform federal German guidelines, but would be extended to beyond this zone if necessary.

The Supervision and Service Directorate (ADD) is offering this advice as a means of informing all those concerned in Rhineland-Palatinate of the effects of a possible accident in the Cattenom nuclear power plant and of the safety measures, and with a view to helping the population prepare itself for such an event.

General information about the Cattenom nuclear power plant

The Cattenom nuclear power plant is located on French national territory in the Département Moselle, approximately 2.5 km northwest of the municipality of Cattenom. It belongs to the national French group Electricité de France (EDF).

The Cattenom nuclear power plant comprises 4 pressurized water reactor blocks. Each power plant block has a capacity of around 1,300 MWel and between 30 and 35 billion kilowatt hours of electricity are generated annually.

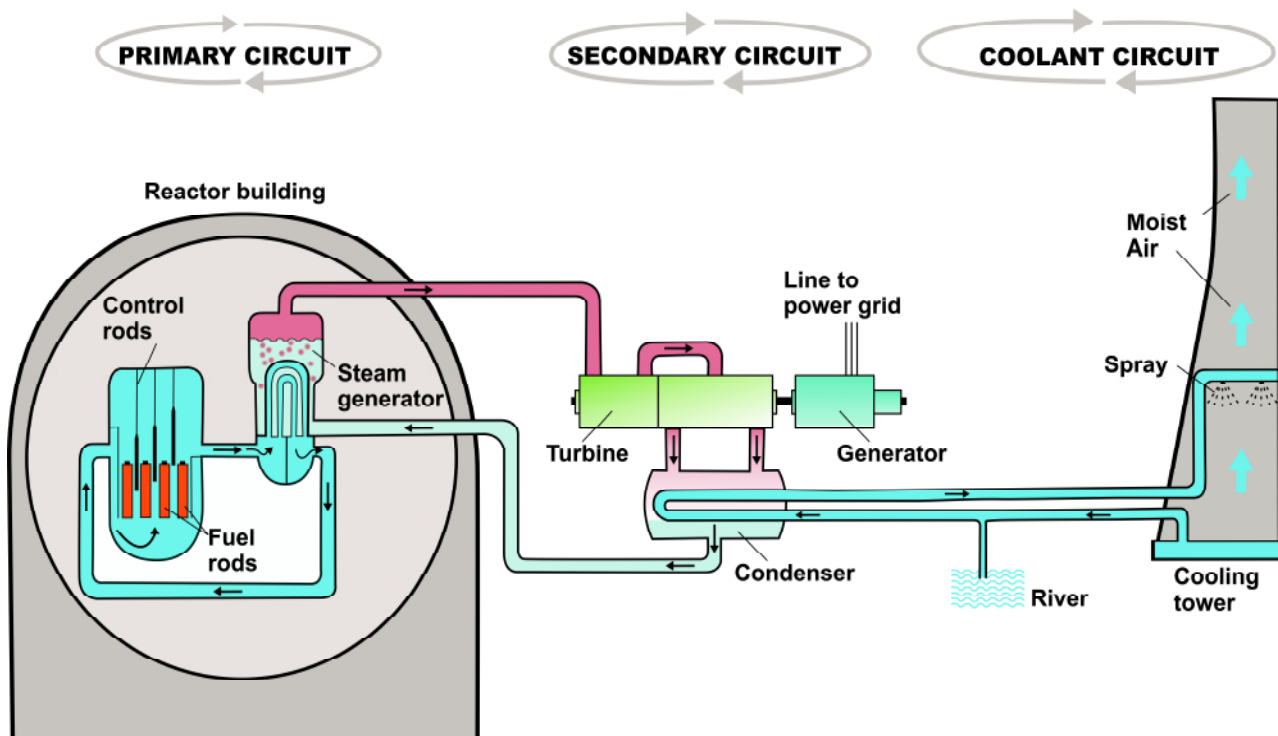
Pressurized water reactors (PWR) belong to the light water reactors and differ from other types essentially by the fact that they have two separate water circuits:

1. Reactor cooling circuit = primary circuit
2. Condensate feedwater circuit = secondary circuit

With the PWR heat is generated by nuclear fission and released into the surrounding coolant (primary circuit) in the containment structure. This heat is transferred to the secondary circuit.

In the secondary circuit the water is evaporated into steam and delivered to the turbines. The turbines are linked directly to the generator. The heat energy is thus converted into electrical energy.

HOW A PRESSURIZED WATER REACTOR WORKS



What could happen?

Even if German and French nuclear power plants have safety features and planned safety precautions that are designed to virtually preclude an accident with significant radiological impact on the surrounding area, there is still an element of risk. Such a course of events could only occur if the existing, graded levels of safety measures failed to take effect and additional precautions to prevent severe damage to the core and to contain the radiological consequences of such were unsuccessful.

Accidents that expel radioactive material, such as recently in Japan or in 1986 in Chernobyl, Ukraine, reveal the risks of this technology.

The environment, people, animals and plants would be exposed to radiation as the result of an accident:

1. External exposure

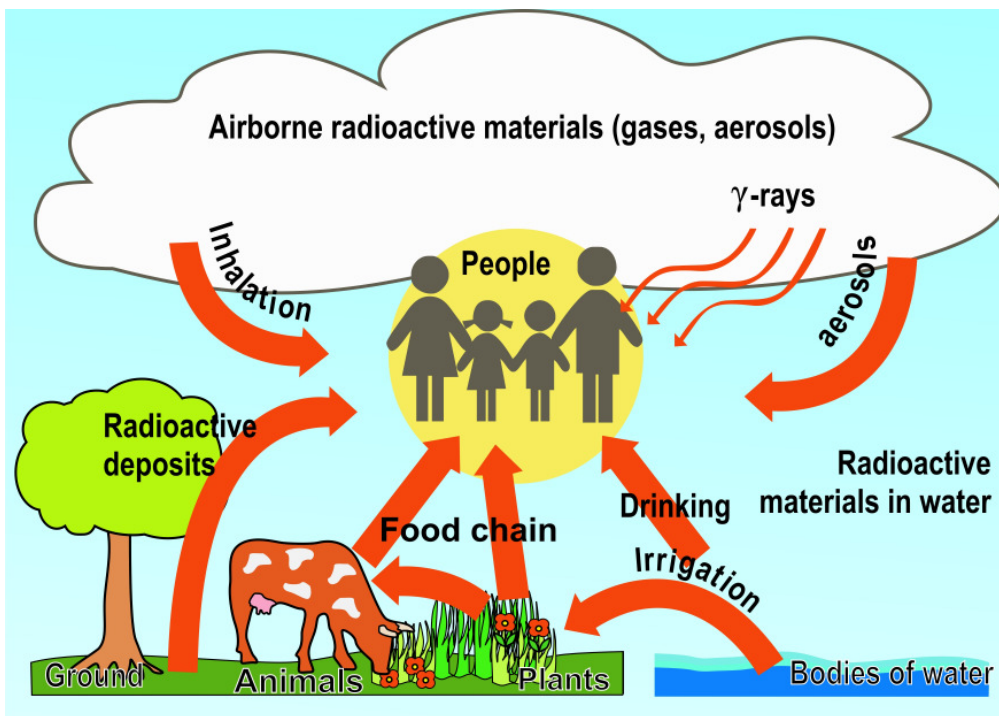
- from the radioactive cloud passing over
(in the first hours or days after an accident)
- from radioactive materials deposited on the ground (after the cloud has passed by)

2. Internal exposure

- by breathing in radioactive particles in the air (from the cloud)
- by eating contaminated food (after the cloud has passed by)

The radioactivity released, in this case called the cloud, is colourless, odourless and thus invisible. However, it can be determined using appropriate measuring equipment. Rhineland-Palatinate uses measuring stations located in the vicinity of nuclear power plants as a special means of monitoring. The gamma dose rate is measured at these stations and the readings taken are shown on: <http://www.strahlung-rlp.de>

Exposure of people, animals and plants to radiation as the result of an accident



What effect does radioactivity have?

Radioactive materials decay continually into other materials and, in the process, emit high-energy rays. These radioactive rays change or destroy somatic cells. If a lot of somatic cells are affected, our health can be seriously endangered.

A distinction is made between acute and chronic health effects. Acute effects occur in cases of exposure to high levels of radiation just a few days afterwards and lead to severe and even incurable physical injury. Chronic, i.e. long-term effects, particularly a higher incidence of cancer or deformities in newborns, often appear years or decades later as the result of low-level exposure to radiation.

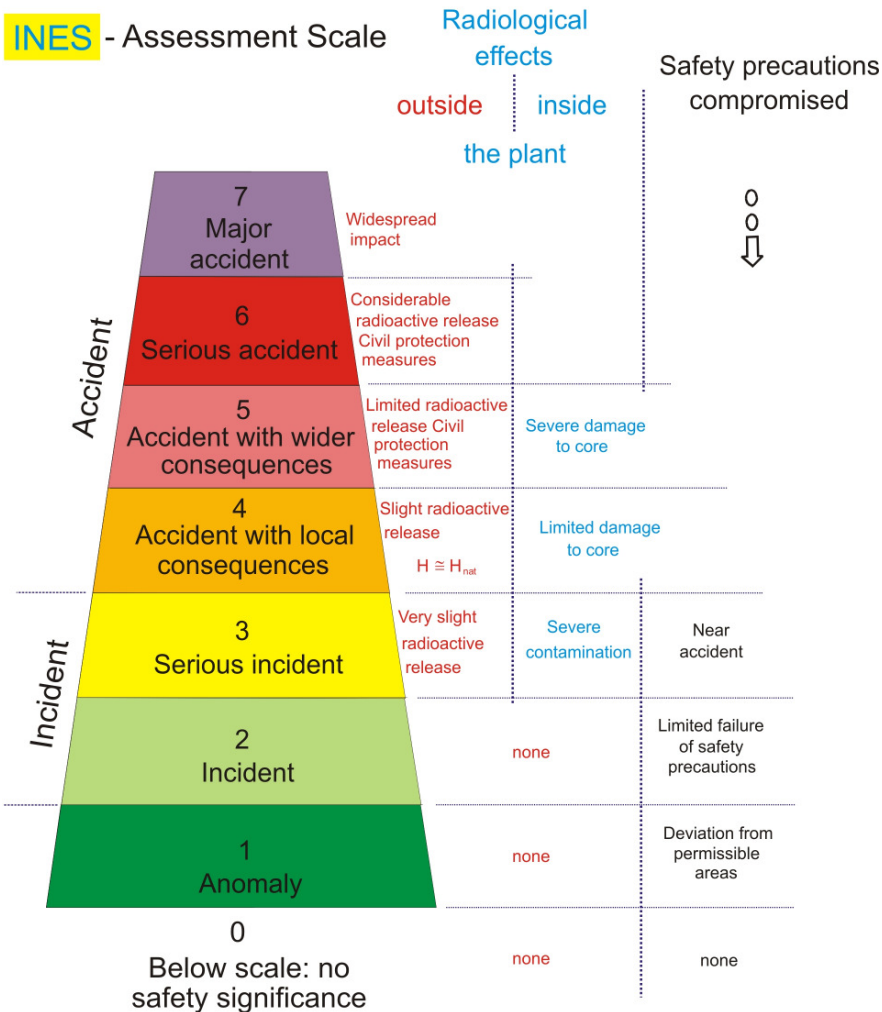
The safety precautions planned for Rhineland-Palatinate are designed to prevent the population being subjected to acute exposure and reduce long-term health effects to a minimum.

Information about civil protection in Rhineland-Palatinate for the area surrounding the Cattenom nuclear power plant

The International Nuclear and Radiological Event Scale (INES) is used to define the accidents/incidents. It was developed by the International Atomic Energy Agency (IAEA), a scientific and technical United Nations Organization (UNO).

The INES scale (see diagram) is designed to communicate clear safety-significant information in the case of nuclear events and make such comprehensible for the general public. It comprises 7 levels for events of considerable safety-related importance - from level 1 (Anomaly) to level 7 (Major accident). There is also a level 0 for below-scale events, i.e. those with little or no safety significance.

International Nuclear Event Scale



Civil protection measures have been drawn up in the case of an accident for the area surrounding nuclear power plants.

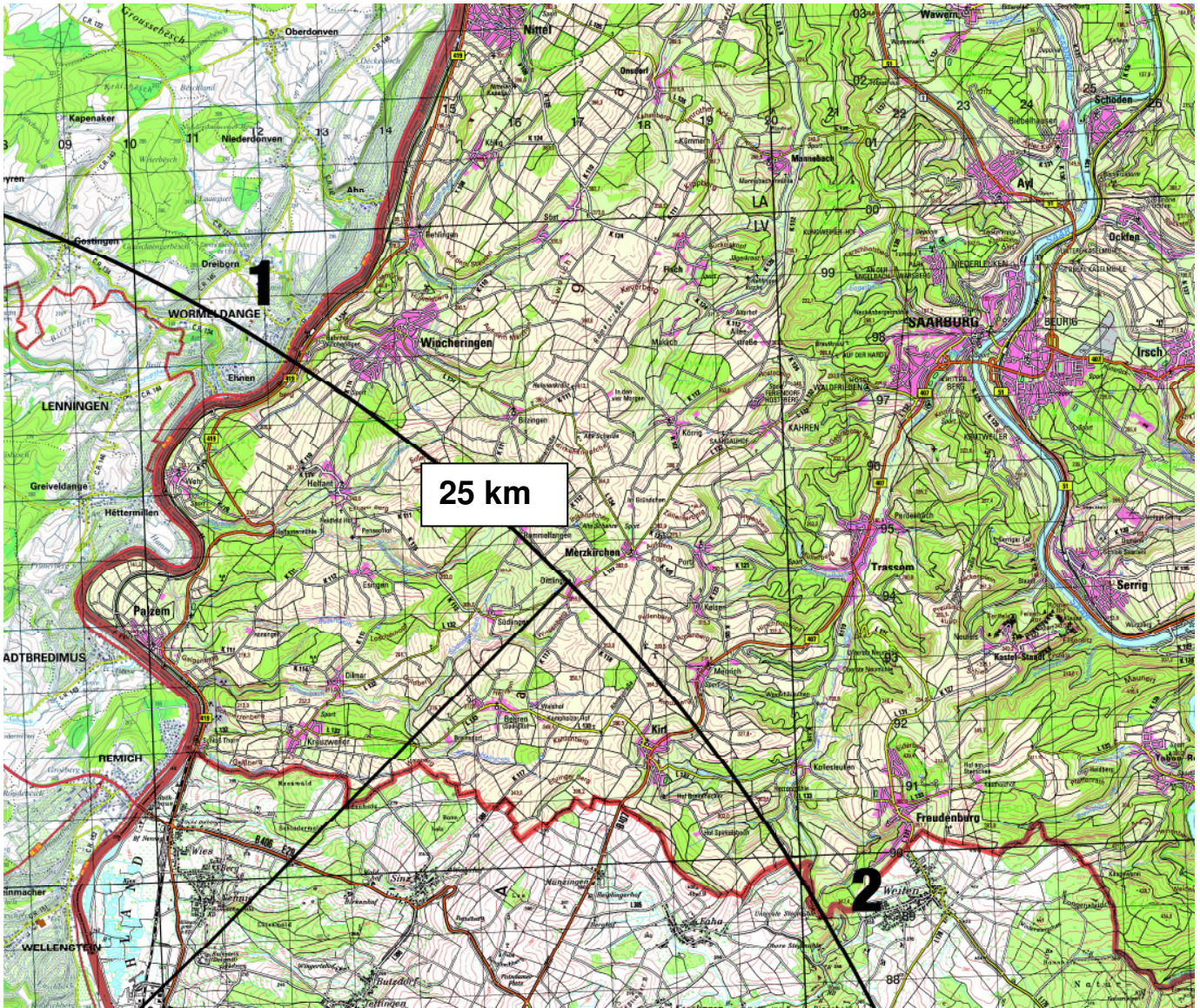
The primary goal of the civil protection plans drawn up by the Supervision and Service Directorate (ADD) for the area surrounding nuclear installations (KatS-Plan KKW) is to prevent or restrict the effects of a nuclear accident having any direct consequences for the population. Since Rhineland-Palatinate does not have any nuclear power plant of its own, the state has aligned its plans with the Commission on Radiological Protection's federal-level general recommendations for civil protection in areas surrounding nuclear installations, which also apply to foreign nuclear power plants close to the border.

The area surrounding nuclear installations is divided into the following zones for planning the individual civil protection measures:

- Central zone (Z): close vicinity of nuclear installation. It covers a circle around the nuclear power plant with a radius of 1.5 km
- Middle zone (M): includes the central zone and covers a circle around the nuclear power plant with a radius of 10 km
- Outer zone (A): includes the middle zone and covers a circle around the nuclear power plant with a radius of 25 km (see map)
- Remote zone (F): covers a circle around the nuclear installation with a radius of 100 km.

Both the central and middle zones for the Cattenom nuclear power plant are located exclusively on French soil, so that no measures need be planned for these zones.

General Map



Data source: „©GeoBasis-DE/LVermGeoRP2011-06-07“

Civil protection measures include:

Warning and informing the population

The general public is informed via the organization and work of the civil protection management and an overview of the situation is broadcast via television, radio and internet. Public address announcements advise the population of such information.

Taking radiation measurements

To assess the radiological situation it is necessary to take measurements in the plant and its surroundings. Details of power plant emissions and the meteorological conditions at the site of the nuclear power plant are just as necessary as measurements from the area surrounding the plant.

The following possibilities are available:

1. Fixed measuring stations run by the operator and the authorities,
2. Mobile direct measurements ,
3. Mobile samples and
4. Measurements taken in laboratories.

Radiation measuring units belonging to the state environmental, water management and industrial inspectorate agency (LUWG) and the fire departments of Kirf, Freudenburg and Trier are used to take mobile direct measurements and samples. Other special measuring vehicles belonging to the fire departments are available if required.

Issuing and taking iodine tablets

Iodine tablets saturate the thyroid with non-radioactive iodine and thus prevent an accumulation of radioactive iodine in the thyroid if taken in good time. The iodine tablets are held available in the administrative district of Trier-Saarburg and will be distributed to the population concerned when required.

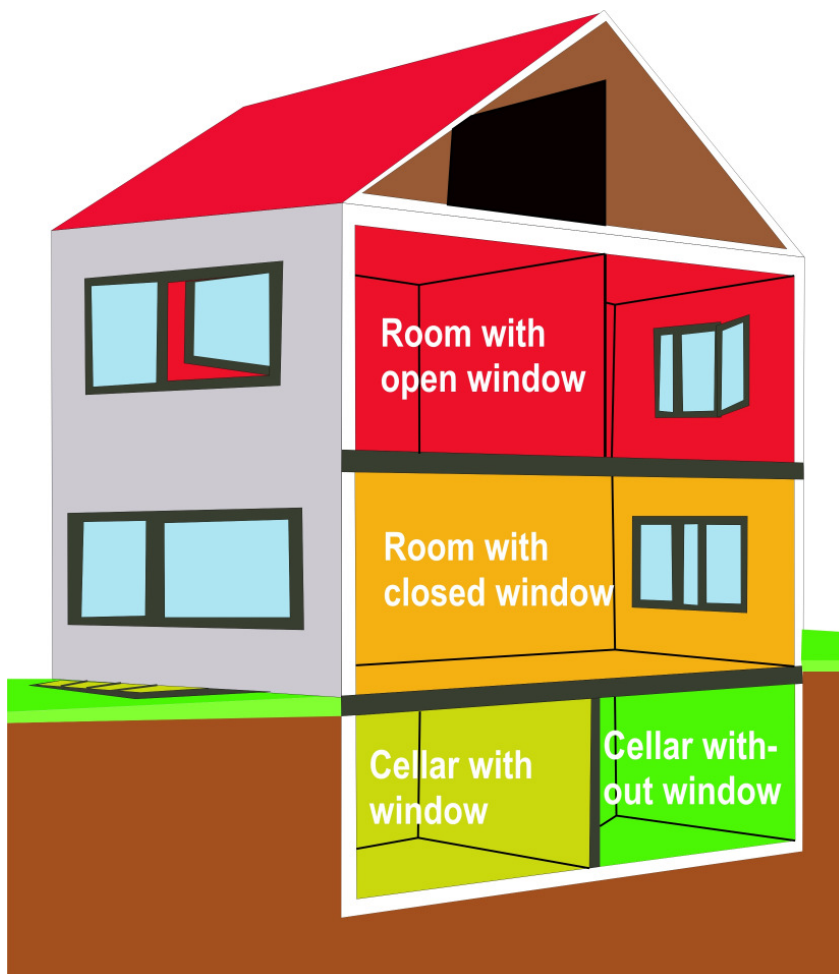
Organization and operation of the emergency unit in Konz

The emergency unit offers the population concerned a wide range of possibilities for obtaining support, assistance and information.

Staying in buildings

Staying in buildings offers protection against external exposure from a radioactive cloud and internal exposure caused by inhalation. The best protective effect is achieved in closed rooms away from doors and windows or in cellars. However, it must be possible to hear any public address and radio announcements. Forced ventilation systems should be switched off temporarily.

Staying in buildings is a simple and effective civil protection measure, but one that can only be maintained for a short time.



Evacuation

If inhabitants were exposed to too high a radiation level despite staying in their homes, evacuation would take effect as a civil protection measure. The administrative district of Trier-Saarburg has drawn up an evacuation plan for the outer zone (25 km around the Cattenom nuclear power plant). The administrative district's general evacuation plan applies to evacuations outside this area.

References:

Cover photo: Dr. Motsch, Saarland agency for environmental and industrial safety

Graphics: ADD

Map of outer zone (Page 9): Rhineland-Palatinate survey and geodetic information agency

General recommendations for civil protection in the vicinity of nuclear installations issued by the Commission on Radiological Protection, official version published in GMBI (joint ministerial gazette) No. 62/63 of 19 December 2008



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