

The radiological impact of Uranium Mining activities of AREVA subsidiaries in NIGER

Example of an efficient cooperation process between a local NGO and a scientific organization

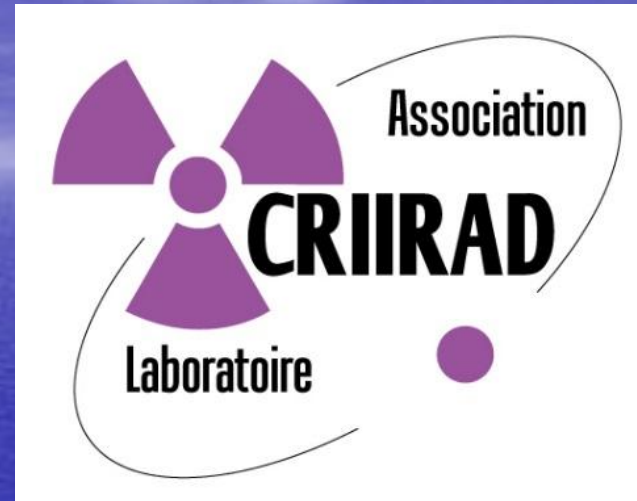
CRIIRAD / EJOLT Project

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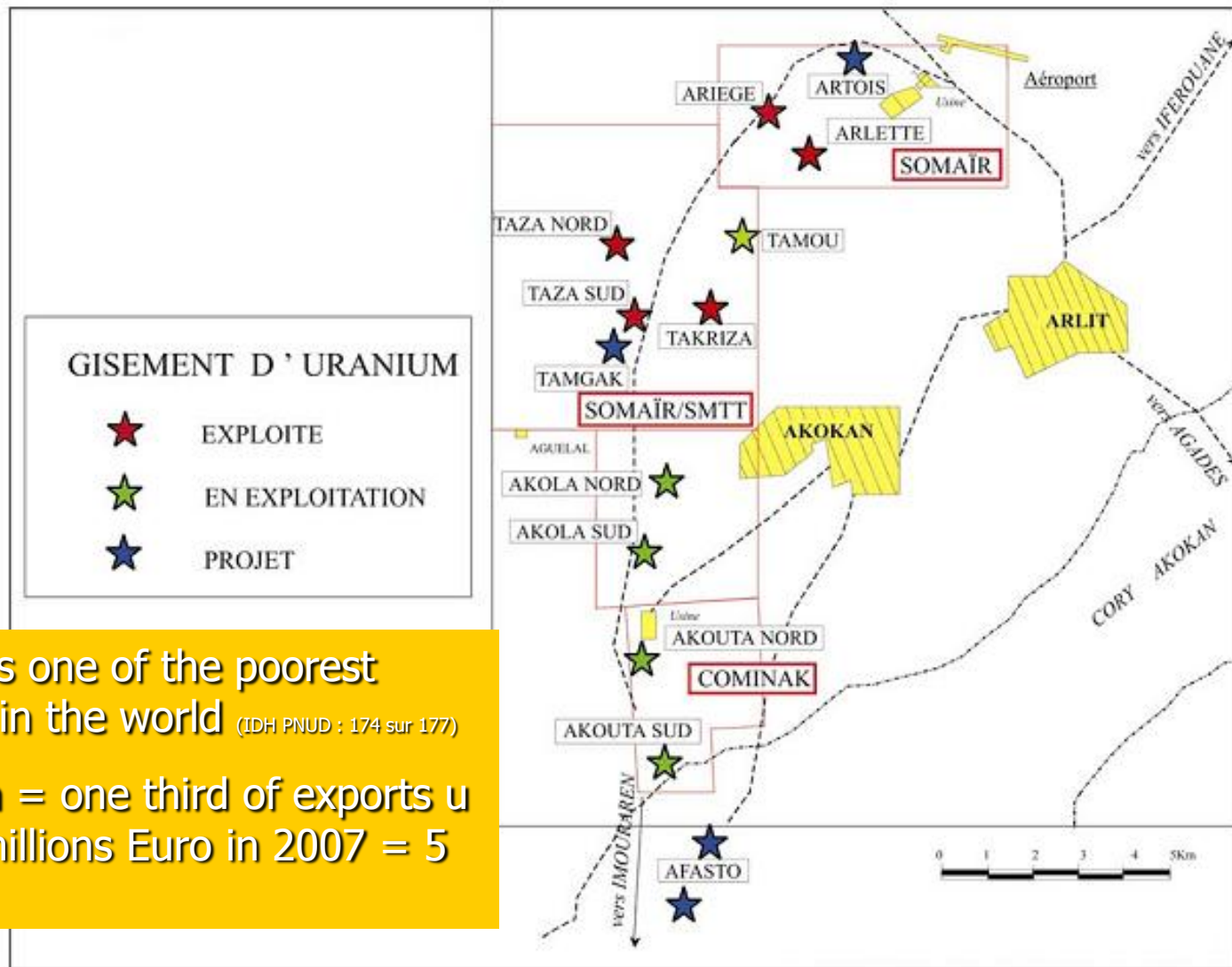


- Since the end of the 60's : more than 100 000 tons of uranium have been produced in Niger
- Compared to 76 000 tons extracted from 1946 to 2000 in France (about 200 uranium mines / all closed)
- Source AREVA dossier de presse 2005 et site web 2009

CRIIRAD mission to Niger /
December 2003, first step of an
ongoing process of mutual learning
through science-activism



ARLIT and AKOKAN cities = 120 000 inhabitants



Niger : is one of the poorest country in the world (IDH PNUD : 174 sur 177)

Uranium = one third of exports u
= 190 millions Euro in 2007 = 5
% GDP

Open pits at SOMAÏR uranium mine (AREVA)



-Actionnariat : AREVA NC 63,4 %, SOPAMIN (Société du Patrimoine des Mines du Niger, anciennement ONAREM) 36,6 %.

-Chiffre d'affaires annuel : 107 millions d'euros en 2007

-Production annuelle : environ 1750 t. (2007)

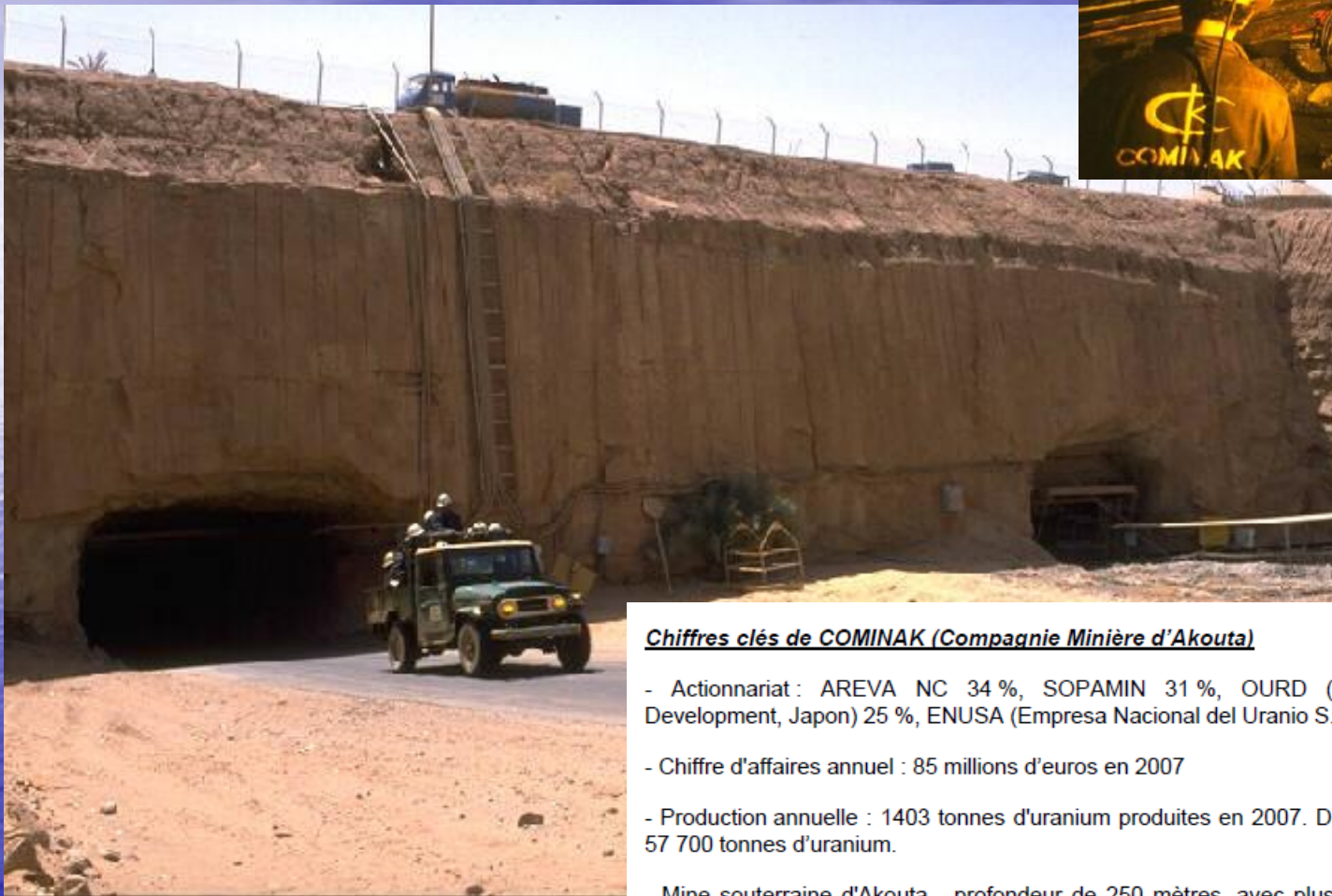
-Production cumulée depuis le début de l'exploitation : environ 46 300 tonnes d'uranium

- Mines à ciel ouvert - profondeur de 50 à 70 mètres.

- Gisement sédimentaire horizontal à 7 km au nord-Ouest de la ville d'Arlit.

Crédit photo : AREVA

Underground uranium mines COMINAK (AREVA)



Chiffres clés de COMINAK (Compagnie Minière d'Akouta)

- Actionnariat : AREVA NC 34 %, SOPAMIN 31 %, OURD (Overseas Uranium Resources Development, Japon) 25 %, ENUSA (Empresa Nacional del Uranio S.A, Espagne) 10 %.
- Chiffre d'affaires annuel : 85 millions d'euros en 2007
- Production annuelle : 1403 tonnes d'uranium produites en 2007. Depuis 1978, COMINAK a produit 57 700 tonnes d'uranium.
- Mine souterraine d'Akouta - profondeur de 250 mètres, avec plus de 250 km de galeries (la plus grande mine d'uranium souterraine au monde)

Mr Almoustapha ALHACEN, président of an NGO in Niger :
AGHIRIN 'MAN asked for CRIIRAD support in 2003



Crédit photo : CRIIRAD, déc 2003

- Immediately after landing at Niamey airport (Niger), CRIIRAD professional monitoring equipment was confiscated by the police



Crédit photo : CRIIRAD, déc 2003

1 / Niger : radioactive scrap metal
from the mines and mills is sold on
the market

December 2003. CRIIRAD performed gamma radiation measurement with a Geiger Muller counter in the streets of ARLIT City (Niger / Africa).

On the pipe below, gamma radiation was 10 times above natural background



The CRIIRAD laboratory analysed a few grams of radioactive crust from the pipe (Uranium 238 = 10,000 Bq/kg, Radium 226 = 240,000 Bq/kg). These are tailings from the SOMAÏR uranium mill (AREVA subsidiary).

In ARLIT (Niger) people commonly re-use scrap metal for their everyday life



Radioactive pipes used for drilling in ARLIT (Niger)
Radiation control made by AGHIR IN MAN : radiation level was 49
times above natural value (year 2009)



Tubes de forage contaminés ($2,5 \mu\text{Sv/h}$ et $4,9 \mu\text{Sv/h}$ au contact, soit 25 à 49 fois plus que le niveau naturel). Débit de dose à 50 centimètres : $1,7 \mu\text{Sv/h}$.

Picture provided by AGHIR IN MAN June 2009

In 2009 the local NGO (AGHIR IN MAN) discovered on the market place (Niger) radioactive liners that were formerly used for the radioactive effluent's ponds of AREVA mills (radiation level more than 100 times above normal)



Crédit photo : AGHIR IN MAN Juin 2009

2 / Niger : radioactive waste rocks
from the mine have been used for
road construction (and even in
dwellings)

Waste rock dump SOMAÏR mine / Niger



Crédit photo : CRIIRAD, déc 2003

Gamma radiation
on contact of the
soil (100 times
above normal)

19 000 c/s

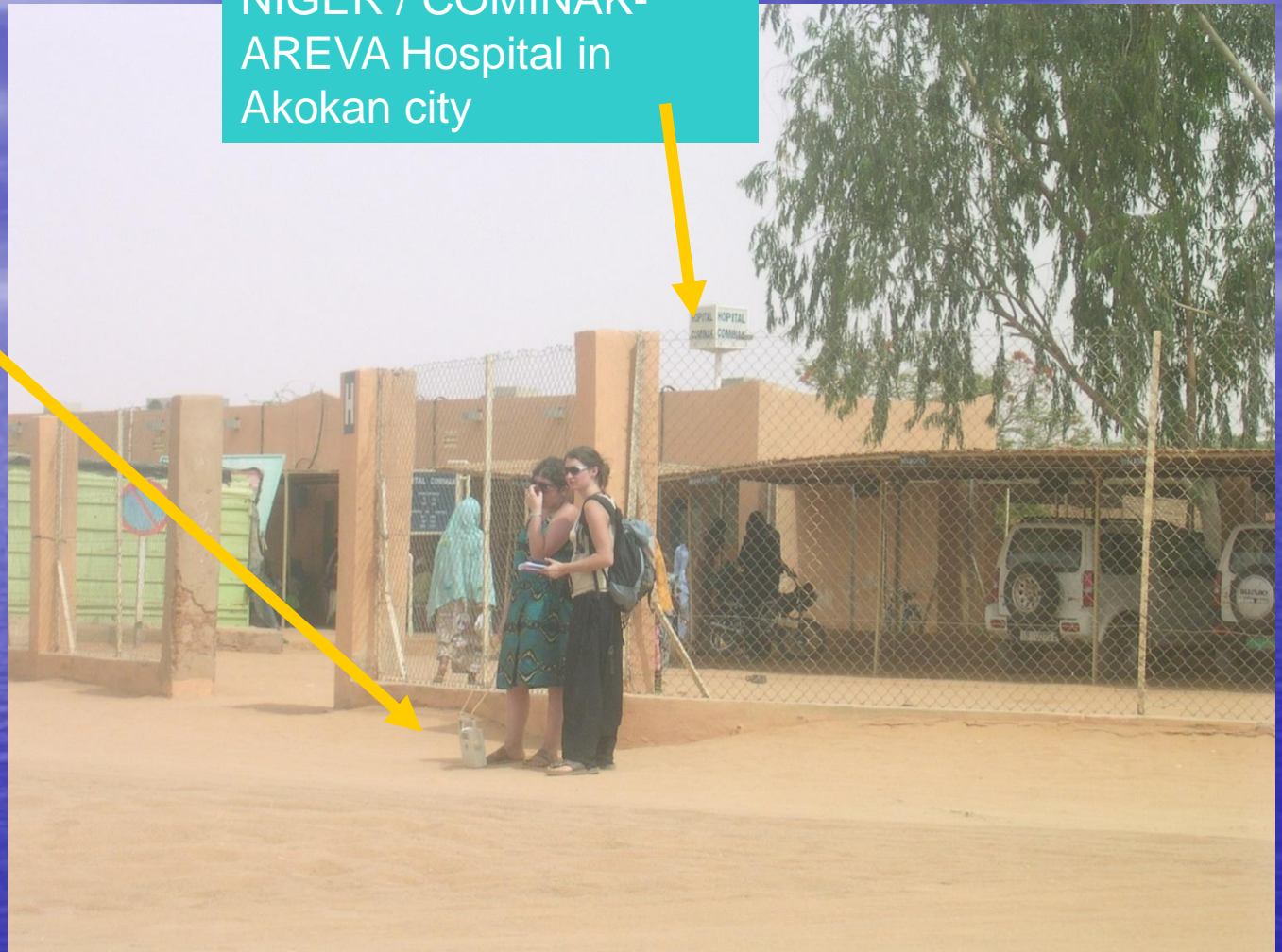
CRIIRAD wrote to
AREVA's CEO Mrs
Lauvergeon in May
2007.

CRIIRAD got no
reply

According to AGHIR
IN MAN : the
removal of
radioactive rocks
took place in 2008.

GREENPEACE
mission November
2009, other
radioactive places
detected

NIGER / COMINAK-
AREVA Hospital in
Akokan city



Crédit photo : C. Chamberland et M. Roche, 2007

3 / Contamination of underground water tables (ex : Arlit, Niger)



- ARLIT : water is pumped from a non renewable resource at a depth of 150 m. About 275 millions m3 pumped from 1969 to 2004 (40 % is used for industrial process)
- AREVA press release (December 2003) : "no contamination" of water
- In fact CRIIRAD showed that COGEMA-AREVA subsidiaries were giving water to the population and workers with Uranium and decay products contamination above WHO standards.
- Some of the drills have been closed since CRIIRAD and SHERPA press conference

4 / About 50 million tons of radioactive waste (tailings) are stored in the open air close to the cities of Arlit and Akokan

Radioactive tailings from COMINAK mill (AREVA subsidiary) in Niger
50 hectares / 14 million tons. : Activity above 500,000 Bq/kg

Tailings are « stored » in the open air :

No confinement of radon gas and radioactive dust. What about the powerfull winds of the desert and the proximity of the cities (a few kilometers away) ?




Storage of radioactive crushed uranium ore
in the open air




Crédit photo : AREVA

5 / People exposure to Radon (a carcinogenic radioactive gas produced by uranium) is exceeding the maximum annual dose limit of 1 milliSievert in the suburbs of Akokan city



One Becquerel Bq =
1 disintegration per
second



Radon concentration in the air discharged
by the underground mine vents is about
3 600 Bq/m³ to 18 000 Bq/m³, according to
the company

Crédit photo : C. Chamberland et M.
Roche, 2007

Keywords : sincerity, integrity,
professionnallism, continuity, trust,
commitment, human, listening,
mutual learning, understanding
each other, fighting,
interculturality, concern, patiente,
courage , credibility, local-global,
national-international