

Alpha-emitting nanoparticles and the Warburg Effect, skin diseases, eating disorders, musculoskeletal disorders, alcoholism, cigarette, hypersexuality and neurofibromatosis type 1

Florent Pirot
florent.pirot@orange.fr
Unaffiliated researcher

Abstract :

Alpha emitting nanoparticulates in internal contamination, an IARC Class 1 carcinogen, have an extremely wide list of effects. New effects are here demonstrated based on a wide epidemiological survey. WHO data in particular is used together with other large sets and juxtaposed to known sources of variations of radioactivity contamination in the environment to demonstrate the link which is always explained by the strong decay energy and its impact on the organism. Some behaviours are shown to be strategies of pain reduction, others of decontamination. This article confirms the simple logic of biophysics (the linear-no-threshold model) outlined by the author in previous publications.

Table of Contents

| | |
|---|----|
| General introduction..... | 1 |
| 1. The overall explanation of the Warburg Effect :..... | 2 |
| 2. Eating disorders, skin diseases, multiple sclerosis and the other musculoskeletal disorders..... | 3 |
| 3. The hypersexual disorder, the use of alcohol and the use of coffee : strategies of protection / decontamination against alpha emitting nanoparticulates produced by natural selection..... | 5 |
| 4. Neurofibromatosis type 1..... | 8 |
| Concluding comments..... | 12 |

General introduction

It is reminded that the progressive extraction of uranium ore leads to the accumulation of new stockpiles of depleted uranium ; in more ancient loads of depleted uranium which are sprayed with bombs, the depleted uranium progressively decays into daughter products which have shorter and shorter half lives¹, and hence a stronger and stronger biological damage relative to the amounts incorporated, in comparison with more recent bombs made with *recently separated depleted*

¹ Which is why, also, the Chernobyl fallout took fire massively this spring : very simple application of Arrhenius' law, the latent heat in the soil is rising and combines with spring heats – a potential barrier can be overcome somewhere, triggers a fire which propagates rapidly.

uranium not containing as much decay products such as U234 and Th230. The effects of depleted uranium contamination in Kuwait come from the aftermath of the 1991 conflict and from the subsequent bombings of Basrah in Iraq in 2003. Both conflicts have brought extremely high levels of depleted uranium dust in this small neighbouring country and Kuwait having been contaminated extremely soon, the nanoparticulates have had time to decay. In addition to this, other types of pollution bring alpha-emitting nanoparticulates : mainly aerosolized radium & its decay products from heavy industries, car traffic, desalination of seawater that is naturally rich in alpha emitters. There is in supplement the issue of neutrons from the sun, the population nevertheless is well accustomed and this does not show up of course in recent changes.

In this paper, cigarette is discussed as “clean” - good quality i.e. without Po210 from phosphated fertilizers, filters seem to manage to protect the user usually (this was not tested by the author who is not a cigarette user in general, it just is an hypothesis) but not nearby bystanders.

1. The overall explanation of the Warburg Effect :

The Warburg effect has a simple explanation : the accumulation of positive charges from alpha emitting nanoparticulates (helium nuclei are positively charged) such as uranium, thorium and radon, in the body, amounts to a progressive acidification because of their positive electronic charge. The contamination sources (radon, U, Th etc. in tap water, "NORMS" in coal, phosphated fertilizers, oil, gas, climbing the food chain, ending in waste incinerators, depleted uranium bombings, nuclear accidents with significant leaks, etc) are the prime cause for cancer around the world.

Alpha emitting nanoparticulates are positively charged and behave as acids. The presence of helium nuclei with their positive charge together with the particulate causes a decrease in pH ; this is in combination with the strong kinetic energy of the decay, wherever the decay happens for an atom on the exterior of the particulate (where it fires directly into neighbouring cells) or inside the particulate – where it converts into vibration and heat. The Warburg Effect fits with the results already presented in *Alpha emitting nanoparticulates, the forgotten pollutant*, with the margin of error (the paper gives >97% of cancers linked to the complete list of alpha emitting nanoparticulates). There are of course other sources of cancer and they combine. Solar neutrons for instance, brutal shocks in general, and all other sources of physical damage – the *chemical energy* of intakes of acidic drinks slowly causing corrosion inside the body, for instance. But, from :

- radon
- natural contamination of uranium, thorium and their decay products in tap water, climbing the food chain and accumulating in meat
- contamination of phosphated fertilizers with U, Th etc and decay products, also contaminating agricultural products, esp. *tobacco*, and climbing as well the food chain and accumulating in meat
- contamination with NORMs in oil, natural gas, coal, passing into fumes, also falling back onto the land, contaminating agriculture, climbing as well the food chain and accumulating in meat, plus radon contamination in indoor agriculture for meat, milk etc
- nuclear accident fallout, depleted uranium weapons, the spreading of uranium mine tailings (and of waste in uranium enrichment, e.g. in East St Louis, Missouri), remains of atmospheric nuclear testing
- Incineration of waste, in general, spreading again the alpha emitting nanoparticulates in the atmosphere (the blame for waste incinerators being usually put on dioxin)

To take a simple example : in the Azores for instance it is well known that there is an extremely high cancer rate (see for instance Lacerda et al) which is mostly linked to the strong radon emission

by the hot sources and other areas of volcanic venting, together with an extremely acute level of exposure to the sun and its neutrons. The contamination with radon also leads to research of products allowing easy *pain anesthesia* such as cigarettes.

These various sources of contamination further demonstrate why a vegan regime is naturally extremely protective of human health.

2. Eating disorders, skin diseases, multiple sclerosis and the other musculoskeletal disorders

I. Methods

The epidemiological effects are shown using WHO DALYs data evolution from 2000 to 2015. The antiquity of depleted uranium deposits of the 1991 conflict have led to a higher alpha activity in these deposits, hence particularly strong health effects relative to the other countries of the region bombed with depleted uranium more recently. The data in Kuwait, a country affected already by the 1991 conflict shows this phenomenon bluntly. WHO data from Saudi Arabia and Jordan is also used. DALYs for which an increase of above +85% over that period are kept except when it is just an increase in a sub-category of a bigger level of reading for which the average increase is inferior to the threshold used.

III. Results

a. Kuwait

1. Malignant neoplasms : in average the overall increase for that sector is of +85,6%.

Colon and rectum cancer : +120,5%

Pancreas cancer : +124,6 %

Breast cancer : +159,6%

Corpus uteri cancer : +240,7%

Ovary cancer : +143,2 %

Prostate cancer : +111,8%

Brain and nervous system cancers : +122,7% (on this see Pirot 2020, AJMCR)

Mesothelioma : +448,5%

2. Endocrine, blood, immune disorders : in average the overall increase for that sector is of +147,2%

Sickle cell disorder and traits : +122,8%

Other haemoglobinopathies and haemolytic anaemias : +112,9%

Other endocrine, blood and immune disorders : +180,8%

For cardiovascular diseases +104,4% in average, respiratory diseases +102,4%, digestive diseases +146,1%. Skin diseases increase by +263,6%.

The WHO data shows another tremendous increase for schizophrenia in Kuwait : + 297,8%. The increase in *eating disorders* DALYs is also very significant (+258,3%).

Musculoskeletal diseases DALYs increase by +300,3%, with +434% for rheumatoid arthritis and +289% for other musculoskeletal disorders.

For Alzheimer's and other forms of dementia the increase is of +148,1%, multiple sclerosis +245%, epilepsy +100,8%, other neurological conditions +99,5%.

b. Jordan and Saudi Arabia

The WHO DALYs data for Jordan, a country also on the sides of the depleted uranium bombings in Iraq and in Syria having also very strong air pollution issues linked to recent densification of car traffic, in addition to a military base possibly contributing near the capital Amman, gives +238,4% for MS, and other relatively strong increases in other diseases : +93,8% for melanoma and other skin cancers, +97% for pancreatic cancer, +92% for trachea, bronchus, lung cancer, +147% for other neoplasms, +132,7% for Alzheimer's and other forms of dementia, and +134,7% for hypertensive heart disease. In Saudi Arabia, also slightly exposed to depleted uranium through winds, together with a strong increase of the use of water desalinization bringing uranium, thorium etc. from the ocean in the diet, WHO DALYs show +94% for multiple sclerosis, +108,3% for colon and rectum cancer, +92,4% for trachea, bronchus, lung cancer, +93,8% for melanoma and other skin cancers, and +158% for other neoplasms. Schizophrenia increases by +118,8%.

IV. Discussion

To read this data the results provided in Pirot (2019 – Alpha emitting nanoparticulates, the forgotten pollutant) are a first frame. The obviousness of the progressive descent of the heavy uranium nanoparticulates in the bottom part of the body after inhalation / ingestion, together with the exposure of the nervous and blood and endocrine system is here again evidenced firmly by the WHO dataset.

The direct genetic effect of the alpha emitting nanoparticulates on the gametes leading to de novo mutations and hereditary diseases of all kinds (Down Syndrome, autism, schizophrenia for instance) was also evidenced already strongly in the above source. For eating disorders the pattern is obviously linked to a tendency to over-eat in many subjects contaminated in the stomach by DU nanoparticles as way to absorb the pain from the alpha decay of the particles. The comments on eating disorders have to be extended to *drug and alcohol use disorders* as the use of quick “pain absorbers” is also fostered by the contamination with DU nanoparticles. In Kuwait alcohol use disorders DALYs increase by 124% (Saudi Arabia: + 109,3%), and drug use disorder DALYs by 191,5% (Saudi Arabia : +274%). The explanatory pattern is the same as for cigarette use : achieving feeling of rapid pain relief.

The increase in skin diseases and melanoma is another obvious effect of depleted uranium nanoparticles corroding the skin. Several studies have noted an unsurprising increase of risk of skin cancer with radon exposure (Wheeler et al 2012, Braüner et al 2015, Vienneau et al 2017) as the decay energy burns slowly the skin, and the pattern is obviously the same with the alpha decay of DU dust deposited on the skin and staying together with the sweat (attracted especially by salty sweat due to the positive charge of alpha particles).

The existing data on multiple sclerosis shows a very high prevalence in rich *granitic* countries (above average natural radioactivity) where the cold and / or wetness during part of the year is an incentive to stay inside and reduce movements such as Finland, Sweden, Canada, Ireland, and in Scotland (Wade 2014), increasing also inhalation of radon ; merging with the above results on DU leads to the direct and obvious conclusion of an intrinsic link between alpha emitting nanoparticulates and multiple sclerosis. In relatively rich countries where the heat creates a similar

constraint on physical movements, together with massive amounts of depleted uranium use, spikes in multiple sclerosis are hence a natural confirmation of the link with alpha emitting nanoparticulates and this is also obvious for the other musculoskeletal disorders. The tendency of salt to attract alpha emitting nanoparticulates on the nerves which are crucial for these troubles has already been shown (Pirrot 2019b).

The obvious pattern of highest risk for these musculoskeletal disorders relates either :

- to subjects whose living level has allowed them to reduce the needs for daily physical exercise (use of cars, absence of need to work physically) and not compensating with sport,
- or to subjects constrained to it by very hot summers or cold (or wet) winters

All likely with a somehow salty diet, slowly accumulating alpha emitting nanoparticulates in the interface between nerves and the skeleton, especially the bottom part of the spine, where they cause progressive damage, always with a degenerative dimension as the decay rate of each nanoparticulate stuck in a given area always accelerates over time².

It must be reminded that in principle all forms of *physical damage* on nerves can trigger a handicap relatable to a musculoskeletal disorder. Alpha emitting nanoparticulates are key but are not the only cause – the principle being the strong energy of the alpha decay causing the destruction, other sources of physical destruction such as repeated hits on bones or falls and other domestic accidents can also lead to such conditions or, much more likely, combine with at least limited levels of contamination with alpha emitting nanoparticles. Strong exposure to solar neutrons, for instance, can as well trigger such handicaps due to neutrons damaging the nerves in e.g. the spinal cord.

3. The hypersexual disorder, the use of alcohol and the use of coffee : strategies of protection / decontamination against alpha emitting nanoparticulates produced by natural selection

Ejaculation has been demonstrated to decrease prostate cancer risk – but there is a much, much longer list of diseases it prevents as of course this is one of the main channels for evacuation of the alpha emitting nanoparticulates.

The study by Boström et al evaluated the differences in expression of MIR4456 through blood analysis – the stream of blood is a strong receptacle of heavy metal contamination in general. The difference in expression is obviously triggered by the presence of alpha emitting nanoparticulates in the blood – alpha decay impacting the genes.

MIR4456 is associated to the colon and rectum as it is linked to the phenotype for ulcerative colitis in five different studies (Jostins et al 2012, McGovern et al 2010, Anderson et al 2011, de Lange et al 2017, Liu et al 2015).

The colon and rectum are among the most significant receptacles for heavy metals due to their position in the body.

DNA damage is triggered by the interaction of the alpha emitting nanoparticulates with the genes carried by blood cells, for instance as the nanoparticulates enter the body's bloodstream from the lower parts of the body's circulatory system, during the last phases of digestion. In this process, ulcerative colitis can be triggered due to alpha decay damage on the bowels.

² Except in the case of contamination with transuranics : Pu239 for instance has a half life much shorter than U235

The other phenotype associated with MIR4456 is also a phenotype linked to the blood-body barrier : cystic fibrosis and other lung diseases (Corvol et al 2015). Here again lung damage can be associated to the penetration of the alpha emitting nanoparticulates in the body after incorporation. The ratio of 5 studies confirming the link for the colon and rectum to 1 study for the lung is directly in link with the tendency of nanoparticulates to fall down to the bottom of the body.

Instead of trying to demonstrate a direct link between the lower expression of the MIR4456 gene and the new pathway in oxytocin in the brain, a simpler analysis relies on the body's endocannabinoid system whose role of ensuring homeostasis has been demonstrated in many studies (see for instance Sallaberry CA and Astern L 2018 for a review) – the endocannabinoid system detects divergences with the usual expression of genes (not specifically MIR4456, but genes in general), and all other divergences with the normal state of health of the body, and as reply to divergences, triggers the brain's stimulation of sexual activity to ensure evacuation of the alpha emitting nanoparticulates – this applies both for male and, of course, female ejaculation.

Natural selection has allowed the selection of this self-protecting behaviour as the elimination of the contaminants obviously reduces the overall risk of diseases.

The study of the authors also indicates an opposite effect (hyposexuality) with the incorporation of alcohol. The presence of alcohol in the blood certainly acts as a temporary shield for the blood cells as the accumulation of molecules rich in C, H, and O can serve as temporary cushion for the alpha decay (C and H especially are good moderators, they also serve as neutron moderators in nuclear reactors), reducing the damage to the body. Hence, in case of a strong alcohol consumption, even in the presence of alpha emitting nanoparticulates at high levels, the reflex of seeking sexual activity is not triggered as the body's endocannabinoid system cannot yet detect their impact.

Research news from the US Veterans' Administration indicates that :

Compulsive sexual behavior (CSB), also known as hypersexual disorder, is of emerging interest in the psychiatric research community. But data are shallow in terms of fully understanding CSB—often defined as difficulties in controlling inappropriate or excessive sexual fantasies, urges, or behaviors that interfere with key areas of daily life—as well as its relation to other mental health problems.

Researchers believe that CSB may be tied in some cases to PTSD, suicide risk, and other psychiatric concerns in the Veteran population. But not enough is known about the relationship. Even explaining why CSB is more prevalent among Veterans compared with non-Veterans, or diagnosing Vets with the disorder and figuring out how best to treat them, has been a challenge.

The high contamination of veterans with depleted uranium obviously explains the high propension of US veterans to the hypersexual disorder.

Bolt, Helming and Tintle (2018) report above-average levels of alcohol disorders in the Chernobyl-affected areas, another form of reaction to the above-average exposure.

The well-reported customs of alcoholism in areas of naturally high radioactivity can be so explained. For France, for instance, data on the ratio of bars per inhabitants shows very high densities of bars in Auvergne, Brittany, Corsica, in the Alps and in the Pireneans, areas of high natural radioactivity (the map is in annex).

The consumption of coffee, which is negatively charged, also helps for the elimination of alpha emitting nanoparticles. It helps for evacuation through the digestive tract as the basicity allows the

capture of alpha emitters and brings them into the faeces thanks to their positive charge. This also explains the strong density of bars in areas of high natural radioactivity. In case of sugars together with the drink, the digestion process which is triggered contradicts the elimination process as the opening of the blood-digestive tract barrier and assimilation activity brings alpha emitting nanoparticulates back into the blood.

Alpha emitting nanoparticulates, in general, travel well beyond the bloodstream and gastric system where the semi-protective alcohol staggers for a short time - so especially as the drinker takes a rest laying down the alpha-emitting nanoparticulates will be able to creep back in the brain during sleep and lead to the terrible headaches of the next morning ; and amnesia from the process that is "industrial" in the Alzheimer disease - endocrine disruption, beta-amyloid and tau proteins occupying the brain and reducing memories of past events (see Pirot 2019b).

As a last comment, this article should obviously not be read as a way to find justifications for legitimizing e.g. rape or other excessive behaviours such as public exhibition in front of tribunals, "sexual" behaviours against the police (urinating on symbols of the order for instance) etc – especially as, for men, one well-described manifestation of the hypersexual disorder is the use of pornography.

4. Neurofibromatosis type 1

I. Introduction

The mechanics of neurofibromatosis type 1 are shown to be directly linked with alpha-emitting nanoparticulates (an IARC Class 1 carcinogen) through review of the existing literature on the subject. It is shown that the genetic disorder at the root of NF1 leads to an accumulation of negative ions (because, it is plotted, of a channel dysfunction) in areas of the nervous system, attracting progressively the alpha-emitting nanoparticulates thanks to their positive charge, leading because of the decay energy to the various forms of destruction, tumorigenesis etc. typical of NF1. Observation of the genetic background also proves the effect of parental contamination leading to de novo cases, frequently associated with various other diseases including congenital malformations themselves linked with such radioactive contamination of the parents.

II. Details

The typical rate for de novo cases in NF1 is of circa 50% (Tsirikos et al 2005) but there are regional variations. In a Dutch study, 74% of molecularly confirmed NF1 cases were de novo mutations (van Minkelen et al 2014) - 42% for the UK (Evans et al 2010).

In Pasmant et al (2016) it is pointed out that more severe and abnormal manifestations of NF1 have been associated with large deletions (in 5 to 10% of the patients), such large deletions can happen with the alea of the alpha decay onto gametes after parental contamination (typically if, relative to the chromosomic package of a gamet, the alpha emitter is at close range) ; the same also provides that „more than half“ of all NF1 cases are caused by de novo mutations.

The variability, with a high rate of de novo mutations in the Netherlands, leads to the already existing bibliography on alpha emitting nanoparticulates and genetic mutations ; the very low natural radioactivity in the Netherlands has to be opposed with the many sources of industrial contamination with alpha emitting nanoparticulates in recent years (tobacco grown with phosphated fertilizers, combustion engine fumes, natural gas, natural contamination in coal for instance... so-called „NORMs“ which accumulate in the food chain, esp. in meats, and are typically spread again in the atmosphere by incineration of waste) leading to a rapid increase in the industrial era (in comparison with naturally very low levels of NF1) in this country. Natural radioactivity is in

average mildly higher in the UK, with strong regional variations and this explains why the local ratio of de novo mutations for NF1 is found to be lower.

Similar work for the epidemiology of a wide array of diseases was already carried out (see Pirot (2019a)) and NF1 presents similarities with various non-communicable diseases listed (cancers, neurological disorders, endocrine disorders).

NF1 is also linked with many congenital malformations (Leppävirta 2018 provides a review of congenital malformations associated with NF1 – esp. cardiovascular, musculoskeletal and central nervous system malformations, together with a smaller group of other malformations), this is an expected result as contamination with alpha-emitting nanoparticulates in parents reaching gonads leads both to genetic damage and to birth defects, or a combination thereof.

Gastrointestinal manifestations of NF1 could be significantly under-recognized and neuroendocrine neoplasms, particularly of the periampullary duodenum, seem to be quite characteristic of NF1 (Agaimy et al 2012). The contamination with heavy alpha-emitting nanoparticulates leads typically to progressive descent, with gravity, of the nanoparticulates in the bottom part of the organism where they accumulate slowly, such a characteristic confirming the direct link. The decay of the typical ^{238}U nanoparticulates causes a progressive increase of the alpha flux over time as the decay products have shorter and shorter half lives (so the alpha flux of a nanoparticulate increases exponentially) ; hence in case of failure to eliminate the nanoparticulates with e.g. urine as the nanoparticulates get stuck in the depth of the bodily organs, the damage increases over time – with accelerating speeds - explaining the aggressivity frequently noted in many conditions, as pointed out already by Pirot (2019a).

III. Analysis

It is hypothesized that the genetic defect causing neurofibromatosis type 1 is an alteration of an ion channel leading to above-average accumulations of anions in cells located in nerves around the body. These nerves become poles of attraction for the alpha-emitting nanoparticulates (positively charged) which hence cause e.g. tumor growth, pain around these nerves. This explains the progressive nature of the disease. An identical pattern was identified for neurological disorders as concern their link with salt intakes, as the accumulation of Cl^- ions in neurons makes them more potent magnets for alpha-emitting nanoparticulates, hence explaining the link between salt and neurological disorders (Pirot 2019b).

The *transient outward* K^+ current in mutant Schwann cells after gene-targeted deletion of neurofibromin (Yanfang et al 2002) is a particularly clear confirmation of the hypothesis.

According to the hypothesis, alpha-emitting nanoparticulates should stagger near the mutant cells. Their positive charges accumulate. Due to this accumulation, there is an increase of the K^+ outward current as the positive charges associated with contamination with alpha-emitting nanoparticulates near the mutant Schwann cells repel K^+ ions at higher levels, in comparison with non-mutant lines of Schwann cells. In Yanfang et al 2002 mutant lines of Schwann cells are obtained from mouse embryos ; contamination with alpha-emitting nanoparticulates happen from the foetus stage in the mother's uterus as she provides the foetus with fluids that necessarily have some level of contamination with alpha emitters, depending on radon contamination in the laboratory, natural contamination in water given to the mother, in her foods...

Findings of *delayed* currents are simply explained by the fact that the alpha emitting nanoparticulate can be expected to be in the core of the tumorous group and hence the positive charge may not necessarily immediately affect the total level of K^+ currents, but as this current needs a few milliseconds to enter the tumor Schwann cells and meet the location where positive charges from

the alpha emitters are lodged, repelling the newcoming charges, there is then an increase in K⁺ currents, explaining results in Fieber et al 2003³.

NF1 is a progressive disease and degenerative co-conditions are sometimes noted (see for instance Coleman et al 1983, Avery et al 2016, Drucker et al 2019, Strowd et al 2016). The degenerative nature of NF1-associated conditions is directly associated with the progressive increase of the alpha flux in e.g. 238U nanoparticulates, as discussed above. The carcinogenic effect of alpha-emitting nanoparticulates has already been proven.

The findings of „unidentified bright objects“ in NF1 subjects and the hypothesis of intramyelinic vacuolization in Billiet et al (2015) also connect with alpha emitting nanoparticulates associated to an area accumulating negative charges ; the alpha decays cause the destruction of nearby cells, hence vacuolization (as the alpha „shots“ radiate in a star-like pattern around the nanoparticulate, causing then necrosis of the closest cells).

The inferior bone health of NF1 patients (Tucker et al 2009) – see also Tsirikos et al 2005 - leads to alpha decays in catalyzing areas located near bones, weakening their structure and making them progressively keener to break ; with the gravity effect on the distribution of alpha-emitting nanoparticulates the tibias are particularly targeted and strongly weakened in NF1 patients (and from there the excretion of the nanoparticulates is harder).

Chronic idiopathic pain and learning and social deficits in NF1 subjects are also very well explained by alpha-emitting nanoparticulates decaying and destroying surrounding cells, in neurons and nerves (see again Pirot 2019a and b).

In Zhu et al (2002), the Figure 1 – image D shows the accretion of nanoparticulates around the spinal cord leading to neurofibroma in the dorsal root ganglia is seemingly visible, small nanoparticulates are obvious especially under, and also at lesser level above the neurofibromas – likewise in image A near the neurofibroma under the skull. The vacuolization immediately around the nanoparticulates is obvious, confirming the alpha decay. Collection of dark spots along the neurofibromas are also evident in all pathology images, showing the accumulation of the alpha-emitting nanoparticulates causing development of the neurofibroma – cell necrosis in the immediate proximity of the decays, and the „tail“ of the decay causing inflammation on the nerve where accumulated anions polarized the decay. In general, in this collection of biopsies as in most biopsies of neurofibromas the progressive advance of alpha-emitting nanoparticulates is obvious. Typically, the vacuoles are seen behind the nanoparticulates that stagger along the neurofibromas. Nerve cells loaded with anions are keeping the alpha-emitting nanoparticulates attracted ; as they advance they leave vacuoles from earlier alpha decays behind them ; and their alpha decays deal damage to the nerve cells themselves leading to neurofibroma formation. Because of the competing positive charges of the various alpha-emitting nanoparticulates, there is a „sinuous pattern“ as the clusters of nanoparticulates are both repelled by each other and collectively attracted by the mutant nerve cells, explaining the labyrinthine pattern of the vacuoles typically seen with in each vacuole a cluster of „dark spots“ at one extremity.

IV. Comments

³ As concerns Yanfang et al 2002 and Fieber et al 2003, in *cultures* of mutant cells, the anions are obviously liberated and lost ; but earlier aggregates of alpha-emitting nanoparticulates that have associated with the mutant cells, having caused necrosis of the immediately adjacent cells all around them, remain associated with the necrosed group of cells as the mutant Schwann cells are extracted from the test subject to be cultivated, hence producing the effect on K⁺ currents.

Neurofibromatosis type 1 is clearly caused by a genetic mutation leading to an alteration of a channel causing accumulation of anions in nerve cells that hence become more attractive for alpha-emitting nanoparticulates, whose progressive damage leads to inflammation and pain, tumorogenesis due to proximity effect, bone damage in the nearby bones that also receive some alpha decays from the nanoparticulates when the equilibrium of charges between the anion pocket in the nerve cell and the nanoparticulate has been found – subsequent decays radiate in other directions -, destruction of neurons and cell necrosis in general.

Typically the non-cancerous nature of neurofibromas is explained by the accumulation of anions leading to installation of many alpha-emitting nanoparticulates around, their progressive decay produces an inflammation but the body is still able to retain control on the nerve, avoiding proliferation due to bystander effect, with solely inflammation from the decays driving progressive growth of the neurofibromas (see Fletcher et al 2019).

The variety of conditions related to NF1, from optical glioma to neoplasms and bone weakening can only be explained by the effect of alpha decay from internal contamination with alpha-emitting nanoparticulates ; the observation of currents shows a pattern typical of the accumulation of positive charges from the helium nuclei of the decay ; the aggressive nature of many co-conditions also fits the pattern of alpha-emitting nanoparticulates⁴, as for the other forms of destruction in the body.

Coffee is a drink of high pH that hence fosters capture of alpha-emitting nanoparticulates and helps to their elimination with toilet use (see also for a particular case, electronegatively charged water naturally produced by soils in Piro 2020, Applied Mathematics and Physics). Use of coffee by patients will help for the progressive excretion of the nanoparticulates, together with a reduction, as much as possible, of exposure to NORMs and other sources of alpha-emitting nanoparticulates (meats, especially red meats, are natural accumulators of heavy metals, including alpha-emitting nanoparticulates, and a meat-poor diet in combination with curcuma intakes has also been demonstrated to significantly reduce NF1 symptoms – see Esposito et al 2017).

Concluding comments

It is reminded that many observational cases, in private life, allowed the author to better understand the above effects.

It is reminded that cosmic fireballs⁵ are rich in ²⁴⁷Cm and super-heavy actinides in general, causing a particularly thin fallout (gas-like plume of alpha-emitting nanoparticulates). Superthin dust has an ability to reach bone marrow superior to what is generally found elsewhere.

It is also reminded that sometimes, solar neutrons (or relativistic neutrons) can change the situation in the body and may increase demand for acid, as they cause fission, also leading to immediate damage in a specific pattern.

The linear-no-threshold model does not stop (of course) to alpha-emitting nanoparticulates and neutrons, it is a general model of energy intake to body reply.

It also is reminded the issue of meat-eating for instance as encouraged unconsciously by the *consumption of alpha emitters* as way to fasten digestion – e.g. through the deliberate drinking of

⁴ Of natural origin – with plutonium 239 for instance there is a relapse in activity as its half-life is shorter than the half-life of its decay product uranium 235.

⁵ For general reference on the subject, read <http://pubs.sciepub.com/ijp/7/4/4/index.html> – relativistic neutrons are dealt with in the bibliography of this paper.

unpure waters, from areas of high natural radioactivity and not decontaminated, or through use of Po210-rich cigarettes.

Supplementary data :

Publicly available datasets were analysed for this study. These can be found here:
https://www.who.int/healthinfo/global_burden_disease/estimates/en/index1.html

More data available on demand to the author.

Acknowledgements :

Particular thanks to the free service provided by Google Trends that allowed early tracking of the bone marrow effect logical with superthin fallout of dissolved superheavy actinides in a cosmic fireball.

Bibliography :

First part :

Iyer R, Lehnert, BE, Svensson R. Factors underlying the Cell Growth-related Bystander Responses to α Particles, *Cancer Research* 2000;60:1290-8

Lacerda F, Pinheiro PS, Cabral JM, Câmara JG, Rodrigues VL. Cancer in the Azores: initial results from a recently established population-based cancer registry, *Revista Brasileira de Epidemiologia*, vol.15 no.2, 2012, doi: 10.1590/S1415-790X2012000200006

Pirot F, *Alpha emitting nanoparticulates, the forgotten pollutant*, in *From an Einstein Syndrome to the People*, Editions universitaires européennes, 2019

Second part :

Miller AC, Rivas R, Tesoro L, Kovalenko G, Kovaric N, Pavlovic P, Brenner D. Radiation exposure from depleted uranium: The radiation bystander effect. *Toxicology and Applied Pharmacology*. 2017 Sep 15;331:135-141. doi: 10.1016/j.taap.2017.06.004.

Pirot F. Traumatic Brain Injury: a Case Report and Its Contribution to Understanding the Underlying Mechanisms - Alpha-Emitting Nanoparticulates Proven as Key. *American Journal of Medical Case Reports*. Vol. 8, No. 4, 2020, pp 100-102. <http://pubs.sciepub.com/ajmcr/8/4/2>, doi: 10.12691/ajmcr-8-4-2

Wheeler BW, Allen J, Depledge MH, Curnow A, 2012, Radon and skin cancer in southwest England: an ecologic study. *Epidemiology* doi: 10.1097/EDE.0b013e31823b6139

Braüner EV, Loft S, Sørensen M, Jensen A, Andersen CE, Ulbak K, Hertel O, Pedersen C, Tjønneland A, Krüger Kjær S, Raaschou-Nielsen O, Residential Radon Exposure and Skin Cancer Incidence in a Prospective Danish Cohort. 2015, *PloS One*, doi: 10.1371/journal.pone.0135642

Vienneau D, de Hoogh K, Hauri D, Vicedo-Cabrera AM, Schindler C, Huss A, Rössli M, SNC Study Group, Effects of Radon and UV Exposure on Skin Cancer Mortality in Switzerland. 2017, Environmental Health Perspectives, doi: 10.1289/EHP825.

Wade BJ, Spatial Analysis of Global Prevalence of Multiple Sclerosis Suggests Need for an Updated Prevalence Scale, 2014, Multiple Sclerosis International, doi: 10.1155/2014/124578

Pirot F. The link between salt and neurological disorders, the mediation of alpha-emitting nanoparticulates as simple explanation, *Porto Biomed J*, 2019; 4(6), doi: 10.1097/j.pbj.0000000000000055

Third part :

Boström AE, Chatzittofis A, Ciuculete DM, Flanagan JN, Krattinger R, Bandstein M, Mwinyi J, Kullak-Ublick GA, Görts Öberg K, Arver S, Schiöth HB & Jokinen J, *Hypermethylation-associated downregulation of microRNA-4456 in hypersexual disorder with putative influence on oxytocin signalling: A DNA methylation analysis of miRNA genes*, Epigenetics, 2019, doi: 10.1080/15592294.2019.1656157

Jostins L, Ripke S, Weersma RK, Duerr RH, McGovern DP, Hui KY, Lee JC, Schumm LP, Sharma Y, Anderson CA, Essers J, Mitrovic M, Ning K, Cleynen I, Theatre E, Spain SL, Raychaudhuri S, Goyette P, Wei Z, Abraham C, Achkar JP, Ahmad T, Amininejad L, Ananthakrishnan AN, Andersen V, Andrews JM, Baidoo L, Balschun T, Bampton PA, Bitton A, Boucher G, Brand S, Büning C, Cohain A, Cichon S, D'Amato M, De Jong D, Devaney KL, Dubinsky M, Edwards C, Ellinghaus D, Ferguson LR, Franchimont D, Fransen K, Geary R, Georges M, Gieger C, Glas J, Haritunians T, Hart A, Hawkey C, Hedl M, Hu X, Karlsen TH, Kupcinskis L, Kugathasan S, Latiano A, Laukens D, Lawrance IC, Lees CW, Louis E, Mahy G, Mansfield J, Morgan AR, Mowat C, Newman W, Palmieri O, Ponsioen CY, Potocnik U, Prescott NJ, Regueiro M, Rotter JI, Russell RK, Sanderson JD, Sans M, Satsangi J, Schreiber S, Simms LA, Sventoraityte J, Targan SR, Taylor KD, Tremelling M, Verspaget HW, De Vos M, Wijmenga C, Wilson DC, Winkelmann J, Xavier RJ, Zeissig S, Zhang B, Zhang CK, Zhao H, International IBD Genetics Consortium (IIBDGC), Silverberg MS, Annesse V, Hakonarson H, Brant SR, Radford-Smith G, Mathew CG, Rioux JD, Schadt EE, Daly MJ, Franke A, Parkes M, Vermeire S, Barrett JC, Cho JH, *Host-microbe interactions have shaped the genetic architecture of inflammatory bowel disease*, Nature, 2012-11-01, doi: 10.1038/nature11582

McGovern DP, Gardet A, Törkvist L, Goyette P, Essers J, Taylor KD, Neale BM, Ong RT, Lagacé C, Li C, Green T, Stevens CR, Beauchamp C, Fleshner PR, Carlson M, D'Amato M, Halfvarson J, Hibberd ML, Lördal M, Padyukov L, Andriulli A, Colombo E, Latiano A, Palmieri O, Bernard EJ, Deslandres C, Hommes DW, de Jong DJ, Stokkers PC, Weersma RK, NIDDK IBD Genetics Consortium, Sharma Y, Silverberg MS, Cho JH, Wu J, Roeder K, Brant SR, Schumm LP, Duerr RH, Dubinsky MC, Glazer NL, Haritunians T, Ippoliti A, Melmed GY, Siscovick DS, Vasiliauskas EA, Targan SR, Annesse V, Wijmenga C, Pettersson S, Rotter JI, Xavier RJ, Daly MJ, Rioux JD, Seielstad M, *Genome-wide association identifies multiple ulcerative colitis susceptibility loci*, Nature Genetics, 2010-03-14, doi: 10.1038/ng.549

Anderson CA, Boucher G, Lees CW, Franke A, D'Amato M, Taylor KD, Lee JC, Goyette P, Imielinski M, Latiano A, Lagacé C, Scott R, Amininejad L, Bumpstead S, Baidoo L, Baldassano RN, Barclay M, Bayless TM, Brand S, Büning C, Colombel JF, Denson LA, De Vos M, Dubinsky M, Edwards C, Ellinghaus D, Fehrmann RS, Floyd JA, Florin T, Franchimont D, Franke L, Georges

M, Glas J, Glazer NL, Guthery SL, Haritunians T, Hayward NK, Hugot JP, Jobin G, Laukens D, Lawrance I, Lémann M, Levine A, Libioulle C, Louis E, McGovern DP, Milla M, Montgomery GW, Morley KI, Mowat C, Ng A, Newman W, Ophoff RA, Papi L, Palmieri O, Peyrin-Biroulet L, Panés J, Phillips A, Prescott NJ, Proctor DD, Roberts R, Russell R, Rutgeerts P, Sanderson J, Sans M, Schumm P, Seibold F, Sharma Y, Simms LA, Seielstad M, Steinhart AH, Targan SR, van den Berg LH, Vatn M, Verspaget H, Walters T, Wijmenga C, Wilson DC, Westra HJ, Xavier RJ, Zhao ZZ, Ponsioen CY, Andersen V, Torkvist L, Gazouli M, Anagnou NP, Karlsen TH, Kupcinskis L, Sventoraityte J, Mansfield JC, Kugathasan S, Silverberg MS, Halfvarson J, Rotter JJ, Mathew CG, Griffiths AM, Gearry R, Ahmad T, Brant SR, Chamaillard M, Satsangi J, Cho JH, Schreiber S, Daly MJ, Barrett JC, Parkes M, Annesse V, Hakonarson H, Radford-Smith G, Duerr RH, Vermeire S, Weersma RK, Rioux JD *Meta-analysis identifies 29 additional ulcerative colitis risk loci, increasing the number of confirmed associations to 47*, Nature Genetics, 2011-02-06, doi: 10.1038/ng.764

De Lange KM, Moutsianas L, Lee JC, Lamb CA, Luo Y, Kennedy NA, Jostins L, Rice DL, Gutierrez-Achury J, Ji SG, Heap G, Nimmo ER, Edwards C, Henderson P, Mowat C, Sanderson J, Satsangi J, Simmons A, Wilson DC, Tremelling M, Hart A, Mathew CG, Newman WG, Parkes M, Lees CW, Uhlig H, Hawkey C, Prescott NJ, Ahmad T, Mansfield JC, Anderson CA, Barrett JC, *Genome-wide association study implicates immune activation of multiple integrin genes in inflammatory bowel disease*, Nature Genetics, 2017-01-09, doi: 10.1038/ng.3760

Corvol H, Blackman SM, Boëlle PY, Gallins PJ, Pace RG, Stonebraker JR, Accurso FJ, Clement A, Collaco JM, Dang H, Dang AT, Franca A, Gong J, Guillot L, Keenan K, Li W, Lin F, Patrone MV, Raraigh KS, Sun L, Zhou YH, O'Neal WK, Sontag MK, Levy H, Durie PR, Rommens JM, Drumm ML, Wright FA, Strug LJ, Cutting GR, Knowles MR, *Genome-wide association meta-analysis identifies five modifier loci of lung disease severity in cystic fibrosis*, Nature Communications, 2015-09-29, doi: 10.1038/ncomms9382

Liu JZ, van Sommeren S, Huang H, Ng SC, Alberts R, Takahashi A, Ripke S, Lee JC, Jostins L, Shah T, Abedian S, Cheon JH, Cho J, Dayani NE, Franke L, Fuyuno Y, Hart A, Juyal RC, Juyal G, Kim WH, Morris AP, Poustchi H, Newman WG, Midha V, Orchard TR, Vahedi H, Sood A, Sung JY, Malekzadeh R, Westra HJ, Yamazaki K, Yang SK, International Multiple Sclerosis Genetics Consortium, International IBD Genetics Consortium, Barrett JC, Alizadeh BZ, Parkes M, Bk T, Daly MJ, Kubo M, Anderson CA, Weersma RK, *Association analyses identify 38 susceptibility loci for inflammatory bowel disease and highlight shared genetic risk across populations*, Nature Genetics, 2015-07-20, doi: 10.1038/ng.3359

Sallaberry CA, Astern L, *The Endocannabinoid System, our Universal Regulator*, Journal of Young Investigators 2018-06-01

US Veterans' Administration, newpiece by Mike Richman, https://www.research.va.gov/currents/0617-study_yields_insight_on_sexual_disorder.cfm 2017-06-07

Bolt MA, Helming LM, Tintle NL, *The Associations between Self-Reported Exposure to the Chernobyl Nuclear Disaster Zone and Mental Health Disorders in Ukraine*, Frontiers in Psychiatry, 2018-02-15, doi: 10.3389/fpsy.2018.00032

Fourth part:

- Tsirikos AI, Saifuddin A, Noordeen MH. Spinal deformity in neurofibromatosis type-1: diagnosis and treatment, *Eur Spine J*. 2005 Jun; 14(5): 427–439. doi: 10.1007/s00586-004-0829-7
- Agaimy A, Vassos N, Croner RS. Gastrointestinal manifestations of neurofibromatosis type 1 (Recklinghausen's disease): clinicopathological spectrum with pathogenetic considerations, *Int J Clin Exp Pathol*. 2012; 5(9): 852–862.
- van Minkelen R, van Bever Y, Kromosoeto JN, et al. A clinical and genetic overview of 18 years neurofibromatosis type 1 molecular diagnostics in the Netherlands. *Clin Genet*. 2014;85(4):318–327. doi:10.1111/cge.12187
- Evans DG, Howard E, Giblin C, Clancy T, Spencer H, Huson SM, et al. Birth incidence and prevalence of tumor-prone syndromes: estimates from a UK family genetic register service. *Am J Med Genet A*. 2010; 152A:327–332. doi: 10.1002/ajmg.a.33139.
- Pasmant E, Vidaud D. Neurofibromatosis Type 1 Molecular Diagnosis: The RNA Point of View, *EbioMedicine (The Lancet)*, April 30, 2016, doi:10.1016/j.ebiom.2016.04.036
- Leppävirta J, Epidemiology of neurofibromatosis type 1 in Finland: Incidence, mortality, pregnancies and congenital malformations, *Annales Universitatis Turkuensis, Medica-Odontologica*, Turku, Finland, 2018
- Yanfang X, Chiamvimonvat N, Vázquez AE, Akunuru S, Ratner N, and Yamoah EN. Gene-Targeted Deletion of Neurofibromin Enhances the Expression of a Transient Outward K⁺ Current in Schwann Cells: A Protein Kinase A-Mediated Mechanism, *J Neurosci*. 2002 Nov 1; 22(21): 9194–9202. doi: 10.1523/JNEUROSCI.22-21-09194.2002
- Fieber LA, González DM, Wallace MR, Muir D. Delayed rectifier K currents in NF1 Schwann cells. Pharmacological block inhibits proliferation. *Neurobiol Dis*. 2003 Jul;13(2):136-46. doi: 10.1016/s0969-9961(03)00031-7
- Coleman BG, Arger PH, Dalinka MK, Obringer AC, Raney BR, Meadows AT. CT of sarcomatous degeneration in neurofibromatosis. *Am J of Roentgenology*. 1983;140(2):383–387. doi: 10.2214/ajr.140.2.383
- Avery RA, Mansoor A, Idrees R, Trimboli-Heidler C, Ishikawa H, Packer RJ, Linguraru MG. Optic pathway glioma volume predicts retinal axon degeneration in neurofibromatosis type 1. *Neurology*. 2016 Dec 6;87(23):2403-2407. doi: 10.1212/WNL.0000000000003402
- Drucker NA, Blaibel MF, Nagaraju S, Wang SK, Goggins W, Fajardo A. Renal Autotransplant and Celiac Artery Bypass for Aneurysmal Degeneration Related to Neurofibromatosis Type 1. *Vasc Endovascular Surg*. 2019 Aug;53(6):497-500. Doi: 10.1177/1538574419846711
- Strowd RE 3rd, Rodriguez FJ, McLendon RE, Vredenburg JJ, Chance AB, Jallo G, Olivi A, Ahn ES, Blakeley JO. Histologically benign, clinically aggressive: Progressive non-optic pathway pilocytic astrocytomas in adults with NF1. *Am J Med Genet A*. 2016 Jun;170(6):1455-61. doi: 10.1002/ajmg.a.37622
- Billiet T, Mädler B, D'Arco F, Peeters R, Deprez S, Plasschaert E, Leemans A, Zhang H, den Bergh BV, Vandenbulcke M, Legius E, Sunaert S, Emsell L. Characterizing the microstructural basis of "unidentified bright objects" in neurofibromatosis type 1: A combined in vivo multicomponent T2

relaxation and multi-shell diffusion MRI analysis. *Neuroimage Clin.* 2014 Apr 13;4:649-58. doi: 10.1016/j.nicl.2014.04.005

Tucker T, Schnabel C, Hartmann M, Friedrich RE, Frieling I, Kruse HP, Mautner VF, Friedman JM. Bone health and fracture rate in individuals with neurofibromatosis 1 (NF1). *J Med Genet.* 2009 Apr;46(4):259-65. doi: 10.1136/jmg.2008.061895.

Zhu Y, Ghosh P, Charnay P, Burns DK, Parada LF. Neurofibromas in NF1: Schwann Cell Origin and Role of Tumor Environment, *Science*, 2002, 296(5569), doi: 10.1126/science.1068452

Fletcher JS, Pundavela J, Ratner N. After *Nf1* loss in Schwann cells, inflammation drives neurofibroma formation, *Neuro-Oncology Advances*, vdz045, doi:10.1093/noajnl/vdz045

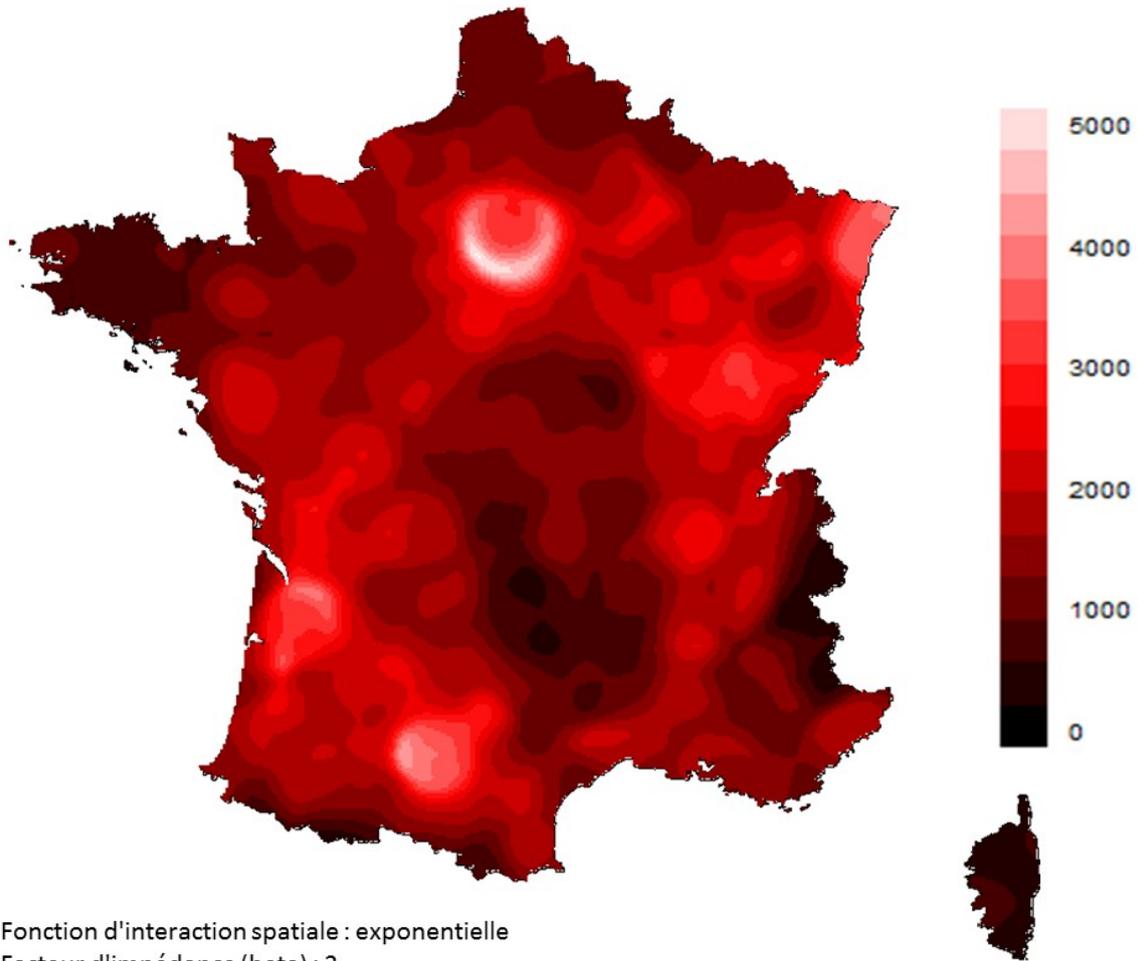
Pirot F. Alpha-Emitting Nanoparticulates and Their Various Physical Effects: More Case Studies in Laboratory Research and History. *Applied Mathematics and Physics*. Vol. 8, No. 1, 2020, pp 1-7. <http://pubs.sciepub.com/amp/8/1/1>, doi: 10.12691/amp-8-1-1

Esposito T, Schettino C, Polverino P, Allocca S, Adelfi L, D'Amico A, Capaldo G, Varriale B, Di Salle A, Peluso G, Sorrentino G, Lus G, Sampaolo S, Di Iorio G, Melone MAB. Synergistic Interplay between Curcumin and Polyphenol-Rich Foods in the Mediterranean Diet: Therapeutic Prospects for Neurofibromatosis 1 Patients, *Nutrients* 2017 Jul; 9(7): 783. doi: 10.3390/nu9070783

Annex :

Nombre d'habitants pour 1 bar

(dans un voisinage fonctionnel de 25 km)



Fonction d'interaction spatiale : exponentielle
Facteur d'impédance (beta) : 2
Portée : 20 kilomètres
Sources : SIRENE 2013 (débits de boissons)– Geofla IGN

Which juxtaposes wholly with the map of radon :

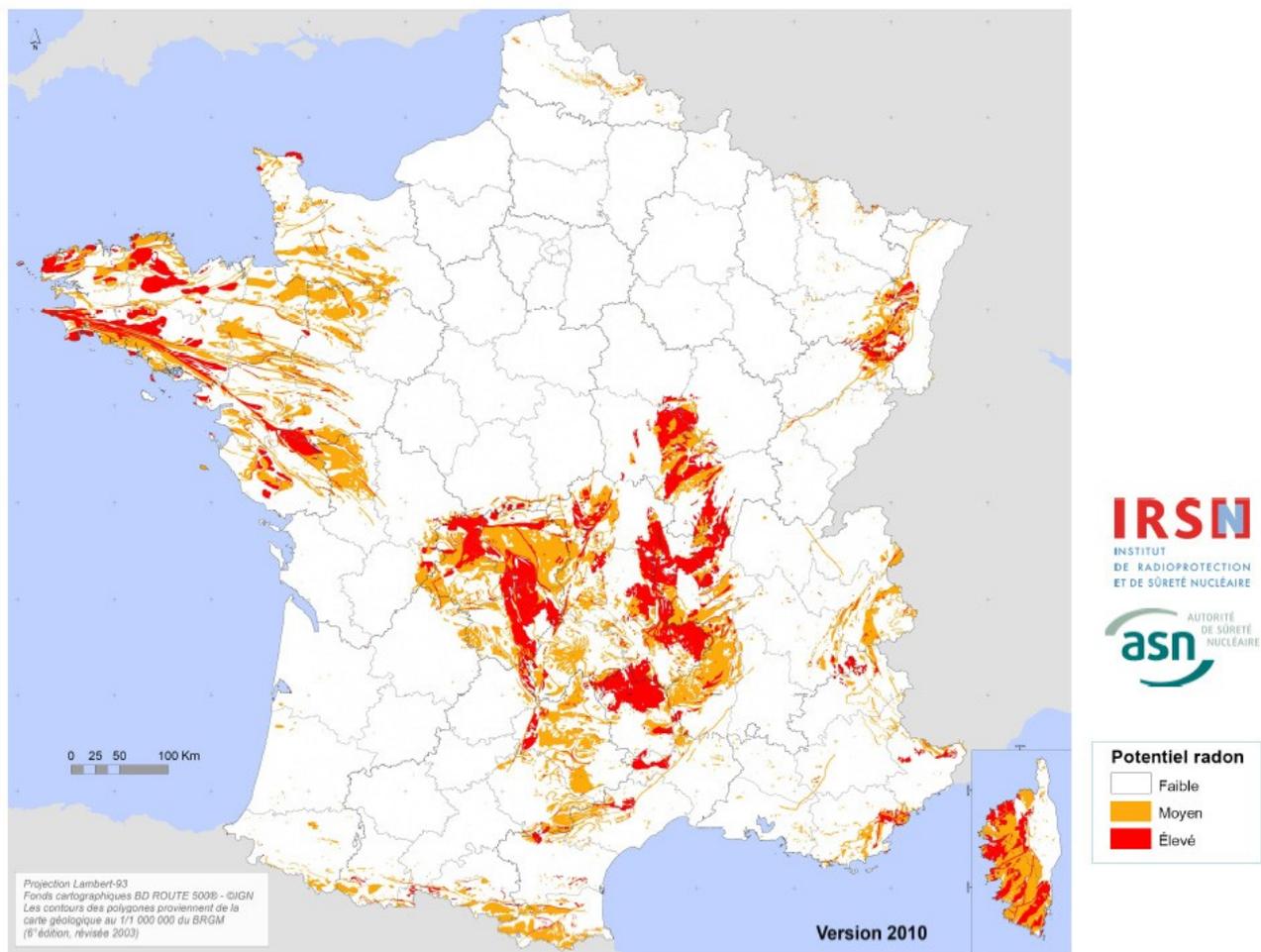


Figure 1 : Carte du potentiel radon des formations géologiques à l'échelle 1:1 000 000, version 2010

Permissions were not required to reproduce these figures as they were obtained from the public domain.