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URANIUM and PLUTONIUM

aren't chocolate

PART 1 : <u>URANIUM (UA / DU)</u> (UA = uranium appauvri)

(DU = depleted uranium)

PART 2 : <u>PLUTONIUM</u>

Fact by Maurice Eugène ANDRE, ++00 43742462 author and editor specialised in nuclear protection, Quai du Halage, 54, 4600 Visé, Belgium, with the voluntary collaboration of our French friend Patrick CHAPUS. October 15, 2003. English translation : Patrick CHAPUS. Free reproduction.

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Pay attention for your lungs !

PART 1 : <u>URANIUM (UA / DU)</u>
CALCULATION OF IRRADIATION GOT BY A HOT ZONE IN A LUNG
IN THE CASE OF DEPLETED URANIUM (UA/DU).

Exposed of Maurice Eugene ANDRE
Translated into English by Patrick CHAPUS.

1. For understanding this talk well, it should beforehand be known that the unstable atoms are called 'atoms radioactives', and they are atoms "gunners omnidirectional" which bombard their entourage of subatomic corpuscular projections, and / or of radiations of the electromagnetic type, some without disabling during hundreds of thousands years.

2. The shootings observed and which emanate from the radioactives atoms, can be classified in several categories :

 - the corpuscular shooting beta is a shooting will projected électrons atom's core (of the kernel) at the speed to approximately 200 000 km per second ; detectable with a radiation meter or room ionization.

 - the neutron corpuscular shooting, shutting neutrons resulting from the core of atom with variable high speeds ;

 - the corpuscular shooting alpha shutting from the particles coming from the core of atom, particles having each one a significant mass of 7 348 electrons. They are ejected to approximately 20 000 km per second, and are made up a group of 2 neutrons joined with 2 protons; is the shooting alpha the heaviest shooting ionizing which exists and which was incorrectly ignored in its harmfulness there is not very a long time still, because shut from exterior of the body it did not cross the barrier of the skin… But shut from interior of the body by clusters of atoms having passed the cutaneous barrier, it is frightening for the release of cancers that it causes. The shooting alpha is detectable with a correctly designed radiation meter.

- the electromagnetic shooting gamma which haven't mass and which is propagated with around of atom, in an omnidirectional way, at the speed of 300 000 km per second which are also the speed of the light. The shooting gamma has a length wave which is specific to the radionuclide which emit it, and this length wave is "a signature" identifying each transmitting radionuclide precisely gamma, in particular detectable by a spectrometer. The shooting gamma is detectable with a radiation meter also, and with a spectrometer, this specifying last with which atom one deals.

3. The damage noted in the alive cells subjected to too significant ionizing shootings, leads sometimes to dead and often to serious illnesses like various cancers.

The shootings definite and quoted herebefore, (shootings alpha, beta, gamma and neutron) are called "ionizing radiations". They ALL are prejudicial at the life when they exceed the capacity of restoration of the cells. The shootings gamma resulting from the ground (natural radioactivity) and the cosmic rays coming from universe, do not exceed normally 1/10ème REM per annum (0,001 sievert) and are not dangerous, as opposed to what ancian school tried to make believe, this school confusing between effects of the dangerous artificial radioactivity and effects of the not handled natural radioactivity.

In situ, ionization in the kernel of the cells, directly produces various acids, bases, and radicals, such HOH, OH, <u>disturbing / unstabilizing their ADN directly</u>.

Each one of ours 100 000 billions [1] of cells count as much 200 000 billion molecules, themselves formed by groups of many atoms. This is an absolutely extraordinary world, very complicated, which is managed according to precise and harmonious laws that we should NOT in no case to disturb "at the root" in their operation, under sorrow distress on the whole of the bodies with serious illnesses.
Hurtful action of the radiations quoted, practise easily on the genetic material that it destroyed or disorganizes dangerously, as we have specified it.

Note (1): For a man of 70 kg.

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It is known that ours hundred and thousand billion cells which make our body, have each one ADN (acid desoxyribonucleic), which ADN "directs" via programming the developments - behaviors - and end of lifetime, (apoptose or commits suicide cells) **of each one of our cells**.

4. <u>To touch with natural organization of ADN is an incredibly irresponsible</u>, **culpabe abyssal ignorance, and lack of total respect of the creation, which exists.** No man is able to manage ADN, and to envisage the consequences of similar criminal incursions.

Following page, we approach the internal calculation of irradiation which a lung undergoes which retains an insoluble particle of DU (depleted uranium which contains only uranium 238, because the ore was impoverished out of Uranium 235) with a diameter of 1 micrometer (either 1 thousandths of millimetre or 10 -6 meter). This irradiation was called "**effect of proximity**" by the person who discovered it since 1974 and published on this subject in an international review with scientific goal in 1978.

5. Before show calculations showing that a dust of uranium 238 (or DU) delivers significant doses with the immediate surroundings of the pulmonary site where it's placed, it is necessary beforehand to know:

¨   that metallic uranium U 238 or DU is a gunner alpha-gamma with 77% of shootings alpha with an kinetic energy of 4.195 MeV and 23% of shootings alpha with an energy of 4.147 MeV;

¨   for calculations we will retain the average value of 4.184 MeV kinetic energy for the particles alpha emitted by uranium 238 or DU ;

¨   that the particles alpha are 7 348 heavier than the electrons, and that they lose all their kinetic energy at a very small distance of 50

micrometers or 1/20ème of mm, which produces an enormous ionization of the cells concerned ;

6. It was a serious error in the past to underestimate the serious harmfulness of the particles alpha <u>acting starting from interior of a body.</u>

7.   CALCULATION OF EFFECT OF PROXIMITY CAUSES BY   URANIUM HAVING PENETRATED INTO A BODY.

(a) We consider that any particle which penetrates into a body is a sphere, that for the facility of calculations. **Volume of one sphere is** of

4/3 x Π x R^3 = 8/6 x Π x (D/2)^3 = 8/6 . Π . D^3 / 8 = <u>1/6 . Π . D^3</u>
This last equation is our starting relation :   **(Relation 0)**

(b) Presumedly spherical **volume** for the facility of calculation, of one particle with a diameter of 10^{-6} meter or 1 micrometer of diameter :

V = 1/6 x p x D ^{3} = 1/6 x p x (10^{-6} meter) ^{3} = 1/6 . p . 10^{-18} m ^{3}

ou **1/6 Π. <u>10^{-15}</u> liter**. Underlined answer herebefore is our   (**relation 1**)

(c)   Weight of one particle of uranium 238 (or DU) presumedly spherical and with volume given by relation (1) herebefore (**diameter of 1 µm**) :

One liter of DU weighting **18 950 grams**, one can write, if **L** represents one liter of DU :
<u>1/6</u> Π . <u>10</u>$^{-15}$ L weighs 1/6. Π x 10^{-15} x 18 950 grams

 or **1/6 . Π. <u>18,95 . 10</u>$^{-12}$** gram   **(relation 2)**

The answer herebefore gives our **relation (2)** which is the weight of the particle of DU.

 (d) Calculation of the radioactivity of the particle defined by the relation (2). The number of disintegrations per second which the particle of DU releases considered, with diameter of 1 micron, is in

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direct connection with the known weight of one curie of U 238 which weighs 3 tons of uranium 238, and which presents 37 billion disintegrations per second or Becquerels (Bq). The number of Bq or
disintegrations per second observed, depends primarily on the weight of DU examined. One can for example calculate how much 1 gram of U 238 (or DU) gives **Bq**. The answer will be that 37 billion Bq coming from 3 tons of U 238, one will have that 1 gram of U 238 will give 3 000 000 less disintegrations, that one will have <u>12 333 Bq</u> **per gram** <u>of U 238</u>.

Or although : 1 gram of U 238 delivers 12 333 Bq or disintegrations per second, this for information.

(e)   Nombre of Bq (disintegration per second) delivered by the particle of UA considered.

This number is worth : Π. 18,95 . 10^{-12} g . 1/6 . 37 Bq . 10 ^{9} . 1/3 000 000 =

Π . <u>10^{-3} . 37 . 18,95 . Bq . 1/6 . 1/3 000 000</u>   **(relation 3)**

(f)   Calculation of the erg number released per second by the particle,

knowing that 5 MeV = 8 . 10^{-6} erg (1 erg being worth 10^{-7} joule) and 4.184 MeV (average value of the particle alpha of DU) being worth 6,7 . 10$^-$ erg.

The required number is worth : 1

Π. 10^{-3} . <u>37 . 18,95 . 6,7 . 10^{-6} . 1/6 . 1/3000000 . erg / sec</u>   **(relation 4)**

 (g)   Calculation of the volume of the sphere of irradiated flesh of 50 µm of ray :

V$_{sph}$ = 4/3 . π . (50 . 10^{-6} m)^3 = <u>4/3 . π. 125 . 10^{-12}</u> liter.   **(relation 5)**

(h)   Calculation of the weight one sphere of flesh of 50 µm of ray :

One can estimate that the weight of one cm^3 of flesh = the weight of one cm^3 of water or 1 gram and it results that the weight of the sphere of flesh considered (irradiated) is of :
4/3 . π. <u>125 . 10^{-9}</u> g.   **(relation 6)**

(i) <u>Irradiation, in erg per gram and per second, of the sphere of flesh ionized by the shootings alpha emitted by the particle of DU with one µmeter of diameter, captive particle in a lung :</u>

The required result is given by the following report/ratio : relation (4) divided by the relation (6).

$(p . 10^{-3} . \underline{37 . 18,95 . 6,7 . 10}^{-6} . \underline{1/6 . 1/3000000 . erg / sec})$ divided by $(\underline{4/3 . \pi . 125 . 10}^{-9}$ g) =

1, 569017 . 10 $^{-6}$. erg . sec $^{-1}$. g $^{-1}$ **(relation 7)**

(j)   As one year dose contains 3,1536 X 10 ^{7} seconds, one notes a pulmonary and specific internal-source irradiation of **3,1536 X 10 ^{7} X 1,569017 X 10 $^{-6}$ erg per gram per year =**

49, 382275 erg per gram per annum.

Like the definition of the RAD (roentgen absorbed dose) is of 100 erg absorbed per 1gramme of living matter, we have the irradiated and very small pulmonary zone surrounding the radioactive DU dust
maybe in RAD = (49,382 / 100) RAD per annum; and as EBR value (*) of alpha rays is 10, one has the following final result : **(49,382 : 100) x 10 =**

4, 938 REM per annum in the alive sphere irradiated by DU, or 5 REM (0,05 sievert) per annum.

                                        (relation 8)

By taking account of the rounded figure we thus have a proven irradiation, specific permanent which adds up **5 REM (0,05 sievert)** inflicted **per annum** at a lung by a dust of DU with diameter of 1 micrometer or thousandths of millimetre (thus invisible with eye) **in a small alive sphere called 'hot zone'** : this is even of "effect of proximity" in an internal specific zone. By holding account also irradiations GAMMA that we can

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Evaluate with the 1/5ème irradiations alpha, we have **a specific total annual irradiation of :**

          5   R E M   (a l p h a)   +   1   R E M   (g a m m a)   =   6   R E M   (t o t a l)   p e r   annum   **(relation 9)**

b y   t h e   p l a c e   s u r r o n d i n g   o n e   d u s t   D U   w i t h   1   µ m e t e r   o f   d i a m e t e r   b l o c k e d   i n   a   lung.

Note * : the letters RBE = factor of Relative Biological Efficacity, which give the biological damage in REM, since

(k)   1 RAD x RBE = X REM.   **(relation 10)**

      The RBE changes with the type of received radiation : it is worth 1 for gamma and x-rays, like for beta ; it is worth from 10 to 20 for alpha, and 20 for the neutron shootings.

(L) VERY SIGNIFICANT CONCLUSION : The radioactive dusts immobilized in a lung have tendancy to gather in CLUSTER in this lung. However so only one cluster of dust UA/DU reaches 5 micrometers diameter and remains prisoner in the lung, the contaminated person will undergo an irradiation of :

6 rem/an X 5^3 **= 750 rem/an,**   **(relation 11)**
in a "hot pulmonary zone" where will leave cancer to be disseminated in body via metastases.

(m)   Col. U.S. Asaf Durakovic was right thus from the beginning to denounce, the serious dangers of DU (or UA, of the words Uranium Appauvri in French) in the projectiles.

(n)   And if PLUTONIUM is present in traces in uranium (DU) used, the consequences will be GRAVELY.   See on this subject my article " Plutonium, this isn't. chocolate ! "

--PART 2 :

PLUTONIUM

Plutonium 239 , it's no chocolate !

Only one plutonium 239 dust which would float in air, (and so small that it would be invisible) could … to kill You,… if you breathe air which contains it ! MISS BOWL ! YES, it's TRUE. And if plutonium is present in traces in DU (air dust with depleted uranium) then, yes You get it !

Therefore I will speak : **It's very dangerous to get air with DU dusts that are contamined with plutonium.** After the few precises details which will follow, You will hold finally between Your hands the mathematical proff that only one dust of plutonium 239 can kill You. Precision : plutonium 239 is the largest killer who exists. And « It » is made entirely by scientists grassement paid. Plutonium is pyrophorus, which means when is burning it will divide in billions of particles which will float into air…Take guard to breathe …

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plutonium ! It is a « gunner alpha ». This means <u>once hidden in You</u>, it 'give' cancer. Inside You it 'shuts' particles having each one an energy of 5 000 000 electrons-volts, or 5 MeV. Its projectiles alpha are seven thousand three hundred forty eight more heavier than the beta rays. In interior of your body, - for example in one of your lungs - , its subatomic projectiles strike your alive cells very extremely and put out of order their ADN. In fact they permanently destroy your alive cells on a few depth of $1/20^{\text{ème}}$ of millimeter, from the dust blocked in the lung. And this permanent 'blitz' of relatively low depth in a lung, causes CANCER free.

Here are the calculations which give the proff of it. Perhaps You wil not understand them easely. They were however certified exacts by the Professor in nuclear physics, Jeans SHEER, who certified it to me <u>by personal letter</u>.

Calculations determine the volume of one tiny dust of Pu 239 which diameter is one micrometer. Then they determine how many subatomic projectiles per second shut this dust, thus that ionizing energy that is released in the alive flesh. Calculations specify the pulmonary volume violently attacked by the plutonium 239 tiny dust which has penetrated into the lung. Calculations determine the weight of global cells violently attacked by dust. Then they give endure irradiation (in erg per gramme and per second) of irradiated alive volume. Finally they bring to Your attention the number of RAD (roentgen absorbed dose) per annum, and the of REM (roentgen equivalent man) per annum that a tiny part of the lung boxed. The result is impressive.

CALCULATIONS THEMSELVES ON PLUTONIUM 239, IN 10 POINTS.

1.   Volume of one particle of plutonium with diameter 'D' of 1 micrometer or $1/1000^{\text{ème}}$ of millimeter (presumed spherical for the facility of calculation). Formulate volume of the sphere : $V = 4/3 \times \pi \times R^3 = 1/6 \times \pi \times D 3$

Expression of the volume of the plutonium dust :
$V_{\text{d.pu}} = 1/6 \times \pi \times (10^{-6} \times 1 \text{ meter})^3$ = **1/6 x π x 10^{-15} liter**   **(relation 1)**

2.   Weight of one particle of Pu 239, with volume given by the relation (1).
Knowing that 1 liter of Pu 239 weights 19 840 grams, one can write, if Lit_{pu} is one liter of Pu 239 :

$1/6 \times \pi \times 10^{-15}$ liter x 1 Lit_{pu} = $1/6 \times \pi \times 10^{-15}$ liter x 19 840 g = $\underline{1/6 \times} \pi \times 10\text{-}12\_ \times 19, 840$ g
                                                                                (relation 2)

3.   Number of disintegrations per second (or Becquerel) which release a plutonium particle 239 with diameter of on micrometer (or of $1/1000^{\text{ème}}$ of mm) ; knowing the weight of this particle (relation 2) and knowing that 1 Curie or 37 billions becquerels are coming from 16,303 grams of Pu 239, we can write, if Bq accounts for 1 disintegration per second, that the number of required Bq is :

$1/6 \times \pi \times 10\text{-}12 \times \underline{19, 840 \text{ g}} \times 37 \text{ Bq} \times 10^9 \times 1/16{,}303 \text{ g} = \pi \times \underline{10^{-3}} \times 37 \times 19{,}840 \times 1/6 \times 1/16{,}303 \times 1 \text{ Bq}$

                                                                  this is our   **(relation 3)**

4.   Search now the number of erg (1 erg = 10^{-7} joule) released per second by the plutonium particle considered in the present study ;

-   knowing that one disintegration resulting atom of Pu 239 projects a particle alpha with an energy
    of 5 MeV or 8 millionth of erg ;
-   knowing the relation (3), we can write :

    number of erg released per second by the particle of Pu 239 considered is :

    $\pi \times 10^{-3} \times 37 \times 19{,}840 \times 1/6 \times 1/16{,}303 \times 8 \times 10^{-6} \times 1$ erg/second =

    $\pi \times 10\text{-}9 \times 37 \times 19{,}840 \times 1/6 \times 1/16{,}303 \times 8 \times 1$ erg per second =   this is our   **(relation 4)**
 5. Going to second phase of the problem, we will write that the volume of the sphere of flesh injuried by the irradiations resulting from the Pu 239 dust, is a small alive sphere of <u>50 micrometers</u> of ray R and having the radioactive dust like center ; and we will have :
                                                               Page 6.
$V_{\text{sph}} = 4/3 \times \pi \times R^3 = 4/3 \times \pi \times (5 \times 10 \times 10^{-6} \times 1 \text{ meter})^3 = \underline{4/3 \times \pi} \times 125 \times 10\text{-}12$ liter **(relation 5)**
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6.   Now, go to the weight from the sphere from irradieted flesh, 50 micrometers of ray. We can estimate that the flesh weights 1g per cubic centimeter. We can write :
The weight of the sphere of flesh which will very violently be irradiated, is of :

4/3 x π x 125 x 10^{-9} x 1 gramme   this is our **(relation 6)**

7.   Compute the irradiation received in erg per gramme and per second, by the small sphere of irradieted flesh which has a radius of 50 micrometers and which has the Pu 239 radioactive dust like center : the result that we seek is given by the fraction having like numerator the relation (4) and like the denominator the (relation 6). Here this result :

(π x 10-9 x 37 x 19,840 x 1/6 x 1/16,303 x 8 x 1 erg per second)

divided by (4/3 x π x 125 x 10^{-9} x 1 gramme), which gives __0, 3602 erg x sec^{-1} x g^{-1}__ .

And as one year contains 3, 1536 x 10^7 seconds, **the small sphere (R=50 micrometers) of irradiated flesh boxes in one year :**

0,3602 erg x sec^{-1} x g^{-1} x 3, 1536 x 10^7 seconds = 11 359 200 ergs per gram per year
                                                                                   (relation 7)

8.   Like the definition of the RAD (roentgen absorbed dose) is of 100 ergs absorbed per 1gramme of living matter, we have the strongly irradiated and very small pulmonary zone surrounding the radioactive Pu dust :
 it boxes the very great absorbed dose of 113 592 RAD per annum

                                                                                   (relation 8)

9.   But the true measurement of biological damage boxed is expressed in REM (abbreviation of Roentgen Equivalent Man) (100 REM = 1 sievert). And to pass RAD in REM it is necessary to apply the factor of Relative Biologique Efficacity (factor RBE) while following the formulate :
« 1 RAD x RBE = X REM ». This factor RBE (factor of harmfulness) depends on the boxed radiations. Here it's rays alpha and their RBE is value 10. The required result will be thus the dose received in the lung by the small alive sphere concerned, which should need every day to be restaured after complete destruction. The alive place of this sphere (R=50 micrometers) in the lung, will be boxed as this way :

113 592 RAD x RBE (10) = 1 135 920 REM per year.   **(relation 9)**

10. But the natural irradiaton for every cells of the body
 (irradiation IN TOTO) **is only 1/10ème REM per annum.**

11.   This means that the small sphere inside the body (R = 50 micrometers) where the radioactive dust is located, will be irradiated more than
TEN MILLION TIMES OF THE NATURAL IRRADIATION : this very high irradiation is due to the presence of the dust of plutonium 239 inside of the lung.   **(relation 10)**

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