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# **Indications of negative effects of aerosols as used for geo-engineering on plant growth**

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## Preface/Abstract

Institutions like UN's Intergovernmental Panel on Climate Change (IPCC), the German Government and the Council of Foreign relations in the USA have recently been introducing the idea of geo-engineering into the public discussion. In 2011 the US government alone invested 2.7 billion US\$ into programs to research the impact of different types of cloud seeding on climate change. This research included several experimental programs. Various barium salts as well as aluminum-oxide and different sulfur-compounds are the main components discussed as aerosols for geo-engineering concepts.

The last few years there have been many reports from concerned citizens about a new type of damage occurring to plants. Grass simply stops growing. Trees drop their bark and die. It has been speculated that these damages could be caused by high values of aluminum, barium, strontium and titanium found in the chemical analysis of affected plant tissue, rain-water and soil-samples. A suspicion and worry arose of a possible link between these high metal findings and the increasingly frequent occurrence of persistent contrails.

We decided to perform a chemical analysis on damaged grass (*Phleum pretense*) and associated soil samples from the Oslo area in order to explore a possible link between retarded plant growth and cloud seeding.

These samples held considerable amounts of barium, strontium, titanium and aluminum. But the total values were in a range that had to be considered as chemically not toxic.

We went on to explore the relationship between the unique electromagnetic qualities of some of the patented aerosols, and the plant uptake of these aerosols. Nano-crystals can be taken up by plants as whole and will remain unaltered. Embedded within the plant tissue these crystals will keep their intrinsic and electromagnetic properties. This could concern especially barium-strontium-titanate, i.e. which is a piezoelectric substance.

There are three theoretical indications for possible damaging effects on plants:

- Plant growth may be inhibited due to interruption in cell communication. The (weak) intercellular UV signals (the bio-photons) responsible for triggering cell division in plants, may be absorbed by the  $(\text{Ba}, \text{Sr}_x)\text{TiO}_3$  nano-crystals.
- Plant DNA may be irradiated by high-energy ultraviolet light released from excited barium or strontium nuclides. The nuclides may enter an excited state by absorbing gamma rays from cosmic radiation while in the clouds.
- The electromagnetic cell potential in plants may be disturbed and set out of balance when  $(\text{Ba}, \text{Sr}_x)\text{TiO}_3$  nano-crystals are hit by terrestrial EMF, microwave or radar-radiation. Due to the piezoelectric properties of  $(\text{Ba}, \text{Sr}_x)\text{TiO}_3$  such radiation induces a change in the crystal-geometry that releases free electrons. A balanced cell potential is fundamental for plant health and growth.

In addition to this possible damage to plants, there are single publications that report negative effects of these aerosols on mammals and humans.

From the metals discussed above, only barium has been sufficiently monitored by state authorities. The data from Germany of the last 15 years show that the values of airborne dust referred to as dry deposition of barium went down by 95%. This is accredited to improved industrial standards and reduced industrial exhaust. There is also a significant reduction seen in the other heavy metals. Rain is measured through its absorption in grass and referred to as wet deposition. During the same period, values for wet deposition of barium have been almost doubled. For the year 2012 the data gathered from private rain samples reveal a wet deposition of 865 t of Barium on the German territory – a value that is supported by the last official data from 2009-2011. Being specifically bound to rain, this must be considered as originating from aerosols of unknown origin. These data have been gathered from hundreds of stations representing a countrywide average.

If all of these aerosols should come from cloud seeding with for example  $(\text{Ba}_{0.5}, \text{Sr}_{0.5})\text{TiO}_3$ , then this would have amounted to 2027 t piezoelectric aerosols per year raining down on Germany only. Different qualities of barium salts are discussed for cloud-seeding, the total amount of  $(\text{Ba}, \text{Sr}_x)\text{TiO}_3$ , is dependent on the Ba/Sr ratio. Also, other aerosols like  $\text{Al}_2\text{O}_3$  might be involved – thus the often-estimated volume of 5000 t/year seem to be realistic.

If only 10 % of this estimated amount of barium-strontium-titanate per territory would be absorbed by grass as whole crystals, this would lead to an optical density of nano-crystals in the grass that would interrupt cell communication between DNA of neighboring cells. Such an interruption would damage plant growth.

Values from Germany as an industrialized country were compared to the less populated Norway. Official data in Norway gathered in 2007 show values of Barium in grass samples that are in average 4 times higher than in Germany. Official data from Norway monitoring air pollution show that the average values for titanium between 1995 and 2010 were unchanged. There was a slight increase in Barium and strontium. However, there was a difference between highest and lowest values. High values found are mainly associated to the uptake of dust from barium-rich soils. These results hint again to a chemical non-toxicity of barium compounds. The analysis does not distinguish between natural barium compounds coming from dry deposition and artificial barium-strontium-titanate nano-crystals from wet deposition.

We have found no published research on the effect of the various patented aerosols. Equipment and infrastructure to implement geo-engineering even in large scale is already in place.

We urge for proper research on the impact of these aerosols on plant growth, microorganisms, plankton, insects, and animals under controlled lab conditions. Aerosols need to be found safe for every aspect of our biosphere before large-scale global cloud seeding is conducted.

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## 1. Introduction

During a project in Norway we were confronted with the problems of a number of farmers who in the year 2012 lost parts of the second harvest of hay. Additionally, the increased appearance of striped clouds was a cause for unease. These clouds appeared in the afternoon and eventually covered the normally blue summer sky with a milky haze at a high altitude. One of the farmers associated the drizzle falling later on such days to damage done to tomato-plants and lettuce. The farmers, who had taken chemical analysis of rain samples and the grass retarded in growth, asked for help interpreting their lab results.

The only anomalies showing in these results concerned barium, strontium and titanium. Aluminum was high but within limits. Knowing that these elements are discussed as parts of aerosols used for cloud seeding, but that in the measured amount they had to be regarded as chemically non-toxic to plants, we looked for possible alternative mechanisms that could lead to plant damage.

At the same time, we were aware that the topic of geo-engineering, also referred to as chemtrails, was discussed in public quite controversial. From the information available it was hard to get a picture of what was actually happening. In this context we felt the need to search for consistent information.

A six-fold line of research has been undertaken to examine the possibility of a relationship between slowed plant growth and deposition of aerosols released by airplanes for the purpose of geo-engineering.

- 1 Going through the patents of aerosols for geo-engineering in order to see what substances to look for, and look for research proving their safety.
- 2 Review research on plant communication and growth.
- 3 Discussing the physical properties of aerosols regarding possible mechanisms that could damage plants.
- 4 Analyzing samples of grass with reduced growth and of the earth underneath to define what part of the findings could have an aerial source.
- 5 Reviewing official data of wet and dry deposition of heavy metals.
- 6 Look at the operational and political aspects of geo-engineering.

Geo-engineering and cloud seeding is discussed as a serious alternative to combat global warming. In cloud-seeding man made particles like metal-oxides in the nano- or micro-scale are brought into the atmosphere by airplanes to function as aerosols. These substances are sprayed at an altitude of 8-10.000 meters. The understanding of what is possible especially with nano-crystals has not yet reached the general public.

To convey a sense of what actually is possible we calculated the values for the aerosol barium-strontium-titanate with a particle size of 10nm. 1 gram of these  $(\text{Ba}, \text{Sr}_x)\text{TiO}_3$  nano-crystals has the amazingly large surface of 2500 square meters. It is possible to spread these nano-crystals so unbelievable thin that they can totally seal 685 square meters. 300 tons would be needed to cover a country of the size of Germany with a one particle thick layer. Bringing this amount out would take only 30 flights assuming that the planes carry

10 tons each. These nano-crystals can stay up in the air up to 18 month, where they would create clouds or haze at high altitude.

The budget of for example the US-governmental research into geo-engineering was 2.7 billion in 2011. In spite of these large investments we have found no published paper on the effect on the biosphere and humans of the patented aerosols. It looks more like testing ways to distribute aerosols into the upper atmosphere effectively.

Geo-engineering holds possibilities connected to other fields then to the reduction of global warming. Geo-engineering can be used in order to protect industrial areas from sun flares by forming a plasma-shield in the upper atmosphere utilizing the piezoelectric properties of these materials. And it can be used to manipulate weather systems. There are also some military applications, like hiding planes from the radar or extending the range of radar and microwave applications by introducing reflective layers into the atmosphere.

Although barium, the non-radioactive strontium isotopes 85, 86, 87 and 88 and titanium as well as their oxides can be regarded as chemically non-toxic<sup>1, 2, 3</sup> to plants, we also have found no evaluation of the specific properties that are connected to the optical and electromagnetic qualities of (Ba, Sr<sub>x</sub>) TiO<sub>3</sub> nano-crystals. We assume that these possible optical effects on bio-systems discussed in this paper simply have – due to the peripheral character of bio-photon research in science – not been thought of.

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<sup>1</sup> Smith, K. A.: THE COMPARATIVE UPTAKE AND TRANSLOCATION BY PLANTS OF CALCIUM, STRONTIUM, BARIUM AND RADIUM. Agricultural Research Council Letcombe Laboratory Wintage, Berkshire, England. Plant and Soil 34, P. 369-379. (1971).

<sup>2</sup> Wójcika, Paweł; Gubbukb, Hamide; Akgülç, Hüseyin; Gunesb, Esmâ; Ucgunc, Kadir; Hakkı; Küçükyumukd, Koçalc & Cenç: RESPONSE OF 'GRANNY SMITH' APPLE TREES TO FOLIAR TITANIUM SPRAYS UNDER CONDITIONS OF LOW SOIL AVAILABILITY OF IRON, MANGANESE, AND ZINC. Journal of Plant Nutrition Volume 33, Issue 13, 2010 pages 1914-1925

<sup>3</sup> INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY, ENVIRONMENTAL HEALTH CRITERIA 107, BARIUM.

## 2. Scientific background

### 2.1. Non-linear optics

Light is scientifically defined as a transversal electromagnetic wave. This is correct when observing continuous transmission of large amounts of photons from one random/chaotic source of light. For this type of light, science knows the possibility of polarization, when the direction of transversal wave structure is reduced onto one optical plane. Polarization occurs due to reflection or by special filters that consist of a grid of parallel lines with a distance smaller than one wavelength, so that waves that are not parallel to the grid can not pass. Another, separate phenomenon is coherence. It occurs when the wave pattern of all photons involved are in phase. Coherence is the quality of light created by laser technologies. Polarization is order in space. Coherence is order in time.

Going back to the origins of electrodynamics, one finds that light not always was assumed as a transversal<sup>4</sup> wave only. Maxwell, the father of modern electrodynamics, tried to describe the transmission of light from the very basic mathematical principals known to be valid for any wave-transmitting medium. Thus he described electromagnetic waves with all three different solutions to the general wave equation, naming transversal, longitudinal and scalar waves. For the calculation of this complex system he used quaternions<sup>5</sup>.

Light is calculated as an electromagnetic wave. "Single photons" can add to each other or delete each other in their field effect. The interference of large amounts of photons from a chaotic source results in transversal waves. The other two solutions to the general wave equation occur only at wave fronts and were dropped by mainstream science. Only a few researchers like E. T. Whittaker<sup>6, 7</sup> followed up the full notation. Later this side-path became a specialized field within non-linear optics<sup>8</sup>.

With the introduction of pulsed laser technologies in the early 90s, the first experimental set-ups and applications were developed utilizing properties of longitudinal and scalar electromagnetic fields<sup>9, 10</sup>. Longitudinal waves occur at the wave fronts of pulsed EM-

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<sup>4</sup> In transversal waves the motion of the particles is 90 degrees to the direction of propagation. A typical example would be waves on the surface of the ocean. In longitudinal waves the particles move in the direction of propagation. A typical example would be sound. Some media can carry both wave types. The distance of the core of an earthquake is analysed by the time difference between the arrival of the longitudinal (quick) and the transversal (slow) wave.

<sup>5</sup> *A Treatise on Electricity and Magnetism*, 2 Bände, Oxford 1873, 2. Auflage 1881 (Hrsg. W. D. Niven, noch mit Maxwells Änderungen in den ersten acht Kapiteln), 3. Auflage 1891 (Hrsg. J. J. Thomson).

<sup>6</sup> E. T. Whittaker, "On the partial differential equations of mathematical physics," *Mathematische Annalen*, Vol. 57, 1903, p. 333-355. 11 V.K. Ignatovich, "The remarkable capabilities of recursive relations," *American Journal of Physics*, 57(10), Oct. 1989, p. 873-878.

<sup>7</sup> E. T. Whittaker, "On an expression of the electromagnetic field due to electrons by means of two scalar potential functions," *Proceedings of the London Mathematical Society, Series 2*, Vol. 1, 1904, p. 367-372.

<sup>8</sup> Amnon Yariv, *Optical Electronics*, 3rd edn., Holt, Rinehart and Winston, New York, 1985. Chapter 16: "Phase Conjugate Optics -- Theory and Applications."

<sup>9</sup> David M. Pepper, "Nonlinear optical phase conjugation," *Optical Engineering*, 21(2), March/April 1982, p. 156-183. On p. 156

waves and laser light. The shorter the pulses, the higher the relative amount of longitudinal field-structure becomes.

Scalar waves can be produced by wave coupling<sup>11</sup> of two pulsed laser beams. It is possible to observe a fusion of the two beams resulting in optical annihilation, in which one wave behaves like a "master wave", the other one as a "slave". Annihilation does not mean the waves completely cease to exist, they just go into a state that is not measurable, and they are pushing the energy content into another dimension. Scientifically one would say that a "pump wave" controls a "time reversed replica wave", which means it makes this replica wave act as if it is flowing backwards in time<sup>12</sup>. This was a very exciting moment for science because it was the first controlled process that involved effects of virtual time-reversal<sup>13, 14</sup> in electromagnetics and thus made it possible to utilize this negentropical<sup>15</sup> process. Negentropy is the physical process that is the basis for the ability of self-organization, especially of organisms, and thus gives understanding of the basic principles of life. This understanding can also lead to a completely new generation of energy technologies<sup>16, 17</sup>. One type of optical applications utilizing these physics is referred to as self-pumped phase conjugation (SPPC) applications.

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<sup>10</sup> See also David M. Pepper, "Applications of optical phase conjugation," *Scientific American*, 254(1), Jan. 1986, p. 74-83. See particularly the striking photographic demonstration of time reversal of disorder on p. 75.

<sup>11</sup> Wave coupling is a special effect in optics. Normally longitudinal em-waves are adding to each other, are overlaying without influencing each other. If they get to similar to each other in frequency and direction of propagation this can change. Suddenly they relate to each other, merge into one waveset whose components are not able to propagate independent from each other. This is called coupling. Wave coupling happens mostly at 0 and 180 degree, some more complex coupling phenomena also occur at 30, 60 and 90 degree. One beautiful example for wave coupling comes from acoustics. Acoustic waves are longitudinal and thus able to couple.

<sup>12</sup> An example to understand the special properties of longitudinal waves: When a sound studio is set up normally the size and form of the room generates some resonant frequencies that are comparably to loud when things are recorded. To lower the intensity of these resonant frequencies a little absorber-box is built that has exactly the same frequency defined by its internal geometry as the unwanted frequencies in the room. The box has a hole and is stuffed with rock wool. Now this box that is normally hung up in one of the corners starts to resonate, sends out a signal to the room, and this signal turns into a pump wave, forcing the unwanted frequencies into the state of time reversed replica waves that then directly flow into the little hole in the box and are there being absorbed by the rockwool. Hard to understand – but reliable in practice. And it is obvious that all this sound can not disappear in this little hole by chance quick enough to kill the slightest echo.

<sup>13</sup> Robert G. Sachs, *The Physics of Time Reversal*, University of Chicago Press, Chicago, Illinois, 1987.

<sup>14</sup> Carl Barus, "A curious inversion in the wave mechanism of the electromagnetic theory of light," *American Journal of Science*, Vol. 5, Fourth Series, May 1898, p. 343-348.

<sup>15</sup> Negentropy is the opposite of entropy. Entropy is the tendency in nature that things lose order; that heat equally distributes, that everything tends to the lowest possible level of energy in equilibrium to the surrounding. Negentropy is the ability to spontaneously build up order and concentrate energy. Negentropy is occurring in biology and in fluid dynamics – generally spoken in non-linear systems that show some kind of self-reference and thus are able to build up fractal order.

<sup>16</sup> T. E. Bearden and Walter Rosenthal, "On a testable unification of electromagnetics, general relativity, and quantum mechanics, Proceedings of the 26th Intersociety Energy Conversion Engineering Conference (IECEC '91), Aug. 4-9, 1991, Boston, Massachusetts, p. 487-492.

<sup>17</sup> Floyd Sweet and T. E. Bearden, "Utilizing scalar electromagnetics to tap vacuum energy," Proceedings of the 26th Intersociety Energy Conversion Engineering Conference (IECEC '91), Aug. 4-9, 1991, Boston, Massachusetts, p. 370-375.



Scalar fields – being a set of two coupled longitudinal waves optically annihilating each other – are the key to understanding the non-local interaction observed in quantum physics, referred to as quantum entanglement.

In this context single photon emissions can be regarded as the most “pure” longitudinal waveform consisting of one longitudinal wave front only.

## 2.2. Bio-photons

The concept of bio-photons dates back to the work of Alexander Gavrilovich Gurwitsch. The Russian biologist observed root-growth of neighboring onion-roots and found out that some kind of emission deriving from the tip of one root strengthened the root-growth of the neighboring root. To find out more about the quality of this emission he separated the two roots with glass of different optical properties and found out that there must be a signal in the range of 260 nm<sup>18</sup> (UV) emitted from the tip of one root, that is triggering cell-division in the other root.

For a number of years this research has been widely ignored. Later on, measurement devices for ultra weak and single photon emissions were developed. The most important researcher who re-introduced the topic into science was Fritz-Albert Popp. Popp established bio-photon measurements as an indicator for the health and age of living organisms. As an example, in Germany bio-photon-measurement is today used by the health-authorities as the only possible way to detect the real age of chicken eggs. According to the measurements carried out by Popp the entire range of bio-photon-activity happens within the band of 200-800 nm<sup>19</sup>.

In the scientific community bio-photons have been discussed mainly as a result of oxidative processes in cell-tissue. They were assumed to be random with no functional importance in biology. There was only little understanding and no interest to explore the more complex function of bio-photons. In response to this, effort has been made by the specialists to differentiate between random photons from chemical processes and light signals containing information of value to biological systems.

The breakthrough was achieved by the Indian researcher Ram P. Bajpai from the Institute of Self-Organizing Systems and Biophysics, North-Eastern Hill University, Shillong, India. Conducting experiments with germinating seeds, he clearly could link bio-photon activity to biological order<sup>20</sup>.

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<sup>18</sup> Nissen, Ted M.A. M.T.: Ultra-weak Photon (Biophoton) Emissions (UPE)-Background Introduction, Copyright © September 2006 Ted Nissen, online October 23<sup>rd</sup> 20012 at <http://www.anatomyfacts.com/research/photonc.htm>

<sup>19</sup> Nissen, Ted M.A. M.T.: Ultra-weak Photon (Biophoton) Emissions (UPE)-Background Introduction, Copyright © September 2006 Ted Nissen, online October 23<sup>rd</sup> 20012 at <http://www.anatomyfacts.com/research/photonc.htm>

<sup>20</sup> [Bajpai Ram P., Bajpai PK, Roy D.](#): Ultraweak photon emission in germinating seeds: a signal of biological order. *J Biolumin Chemilumin.* 1991 Oct-Dec;6(4):227-30.

Bajpal also linked this bio-photon-activity to non-linear optics and quantum physics. Citing the abstract of one of his latest publications:

Coherence is a property of the description of the system in the classical framework in which the subunits of a system act in a cooperative manner. Coherence becomes classical if the agent causing cooperation is discernible otherwise it is quantum coherence. Both stimulated and spontaneous biophoton signals show properties that can be attributed to the cooperative actions of many photon-emitting units. But the agents responsible for the cooperative actions of units have not been discovered so far. The stimulated signal decays with non-exponential character. It is system and situation specific and sensitive to many physiological and environmental factors. Its measurable holistic parameters are strength, shape, relative strengths of spectral components, and excitation curve. The spontaneous signal is non-decaying with the probabilities of detecting various number of photons to be neither normal nor Poisson. The detected probabilities in a signal of *Parmelia tinctorum* match with probabilities expected in a squeezed state of photons. It is speculated that an *in vivo* nucleic acid molecule is an assembly of intermittent quantum patches that emit biophoton in quantum transitions. The distributions of quantum patches and their lifetimes determine the holistic features of biophoton signals, so that the coherence of biophotons is merely a manifestation of the coherence of living systems.<sup>21</sup>

Major progress in the measurement of the visible part of bio-photon-activity was achieved by the Russian researcher Dr. Konstantin G. Korotkov<sup>22, 23, 24, 25</sup>. The tradition of research Korotkov based his studies on first caught wide attention with the Kirlian photography in the late 60s.

Regarding that this research started with the observation of the visible part of bio-photon activity, it is exciting how science slowly discovers the important role of the invisible part, the high amount of bi-directional, annihilated bio-photon pairs that via quantum entanglement interconnect biological systems also on long distances.

Like one would expect from quantum entanglement or in other words scalar waves the information carried by such a wave is transmitted instantly, and is not limited by the speed of light. This effect could be proved for communication within biological systems – like with blood taken out and deposited thousands of kilometers away from the former owner. Still this blood instantly reacted on emotional stress of the body it belonged to – showing a transmission of information far beyond the speed of light.

Another fact illustrating the major role of the annihilated part of bio-photon activity is that when a being dies, in the moment of death there is a burst of bio-photons leaving the body

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<sup>21</sup> Bajpai Ram P.: Quantum coherence of biophotons and living systems. Indian J Exp Biol. 2003 May;41(5):514-27.

<sup>22</sup> Korotkov K. Measuring Energy Fields. Proceedings of the International Conference “Vastu Panorama”, Indoor, India, 2008.

<sup>23</sup> Korotkov K. General principles of electrophotonic analysis. Proceedings of the International Scientific Conference “MEASURING ENERGY FIELDS”, Kamnik, Tunjice, 2007, pp. 87-92.

<sup>24</sup> Korotkov K, Williams B, Wisneski L. Biophysical Energy Transfer Mechanisms in Living Systems: The Basis of Life Processes. *J of Alternative and Complementary Medicine*, 2004, 10, 1, 49-57.

<sup>25</sup> Bascom R, Buyantseva L, Zhegmin Q, Dolina M, Korotkov K: Gas discharge visualization (GDV)-bioelectrography. Description of GDV performance under workshop conditions and principles for consideration of GDV as a possible health status measure; in Francomano CA, Jonas WB, Chez RA (eds): Proceedings: Measuring the Human Energy Field. State of the Science. Corona del Mar, CA, Samueli Institute, 2002, pp 55–66. 2003

– originating from the bio-photon activity dis-tangled at that very special moment – when cell communication is losing its coherence.

### 2.3. Optical properties of nano-crystals

In the discussion about geo-engineering,  $(\text{Ba}, \text{Sr}_x) \text{TiO}_3$  nano-crystals are often mentioned as one possible compound of the aerosol mixture.

Barium-titanate is a dielectric ceramic used for capacitors. It is a piezoelectric material for microphones and other transducers. The spontaneous polarization of barium-titanate is about  $0.15 \text{ C/m}^2$  at room temperature and its Curie point is  $120 \text{ }^\circ\text{C}$ .<sup>[5]</sup> As a piezoelectric material, it was largely replaced by lead-zirconate-titanate, also known as PZT. Polycrystalline barium-titanate displays positive temperature coefficient, making it a useful material for thermistors and self-regulating electric heating systems.

Barium-titanate-crystals find use in nonlinear optics. The material has high beam-coupling gain, and can be operated at visible and near-infrared wavelengths. It has the highest reflectivity of the materials used for self-pumped phase conjugation (SPPC) applications. It can be used for continuous-wave four-wave mixing with milliwatt-range optical power. For photorefractive applications, barium-titanate can be doped by various other elements, e.g. iron.

Thin films of barium-titanate display electrooptic modulation to frequencies over 40 GHz.

The pyroelectric and ferroelectric properties of barium-titanate are used in some types of uncooled sensors for thermal cameras.

High purity barium-titanate-powder is reported to be a key component of new barium-titanate capacitor energy storage systems for use in electric vehicles.<sup>26</sup>

Regarding the non-linear optical properties of these crystals, there are a number of interesting qualities and applications. They can “up-convert” photons, transforming input of a number of photons of a lower frequency into output of one photon of a higher frequency<sup>27</sup>. They can also alter the spin of photons<sup>28</sup>.

Being distributed in a cluster of relative large distances between nano-crystals, like in aerosols or as an equally distributed pollutant in cell tissue, they can show optical qualities of second and third order<sup>29</sup>, a quality that is connected to the ability to create holographic

<sup>26</sup> Wikipedia, online at [http://en.wikipedia.org/wiki/Barium\\_titanate](http://en.wikipedia.org/wiki/Barium_titanate) on Nov. 22nd 2012.

<sup>27</sup> G. Chen, T. Ohulchansky, A. Kachynski, H. Ågren and P.N. Prasad: Intense Visible and Near-Infrared Upconversion Photoluminescence in Colloidal  $\text{LiYF}_4:\text{Er}^{3+}$  Nanocrystals under Excitation at 1490 nm. ACS NANO 5, 4981, 2011.C. Yuan, G. Chen, P.N. Prasad, T.Y. Ohulchansky, Z. Ning, H. Tian, L. Sun and H. Ågren: Use of colloidal upconversion nanocrystals to energy relay solar cell light harvesting in the near infrared region. J. Mat.Chem. 22, 16709, 2012.

<sup>28</sup> Jha, P. C., Rinkevicius, Z. and Ågren, H.: Spin multiplicity dependence of nonlinear optical properties. ChemPhysChem. 10, 817, 2009.

<sup>29</sup> Second and third order as a phenomena can easiest be explained with some pieces of modern art. Everyone has seen these pictures where every “pixel” is formed by a picture that has the average color and brightness of the pixel it represents. The content of these little pictures would be the first order, the picture they create as a cluster of pictures would represent the second order. And so on. The term is thus associated to “information”.

pictures.<sup>30</sup> These properties are utilized for holographic screening technologies utilizing 4 lasers turning a (Ba, Sr<sub>x</sub>) TiO<sub>3</sub> nano-crystals cloud into a holographic screen<sup>31</sup>.

### 3. Optical interruption of cell communication

#### 3.1. Effects on plants

Plants take up nano-crystals as a whole. This may happen via the roots as well as via the leaf surface. The effect is utilized for example in leaf-fertilizers like Megagreen<sup>®</sup>. There are variations depending on the plant size, but particles smaller than approx. 100nm can pass through most of the membranes.

To summarize the findings: on one side we have the concept of bio-photons as a second grade non-linear-optical system. As a result of a holographic projection of the DNA clusters this system creates the blueprint for plants, animals and humans. The non-visible part preserves order. The visible part restores and extends order by triggering cell division. The principle of life is as simple as these visible bio-photons are triggering cell division in a way that the plants repair missing cells and grow at defined areas – thus showing the main characteristics of self-organization.

On the other side we have the concept of non-linear holographic projection with (Ba, Sr<sub>x</sub>) TiO<sub>3</sub> nano-crystal-clusters using coherent pulsed laser light.

Both systems work with coherent light. Both systems work with longitudinal wave-forms (pulsed laser light and single photon emissions). Both systems work at the same range of frequencies. Both project blueprints of higher order via clusters.

Thus it becomes obvious that one should expect some interference when both DNA- and nano-crystal-clusters are positioned in the same place.

The properties of the nano-crystals could result in the following effects.

- The absorption of signals shorter than 260 nm is likely to eliminate the mono-directional signals responsible for cell division. Barium-strontium-titanate nano-crystals absorb UV light with wavelength shorter than approx. 250 nm, absorbing 90% of the light passing the crystal<sup>32, 33</sup>.

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<sup>30</sup> Y. Fu, S. Hellström and H. Ågren: Nonlinear Optical Properties of Quantum Dots - Excitons in Nanostructures. J Nonlinear Optical Physics & Materials, vol.18, p.195-226, 2009. Z. Rinkevicius, J. Autschbach, A. Baev, M. Swihart, H. Ågren and P.N. Prasad: Novel Pathways for Enhancing Nonlinearity of Organics Utilizing Metal Clusters. J. Phys. Chem. A, vol. 114, pp. 7590-7594, 2010.

<sup>31</sup> Heid, Christy A.; Ketchel, Brian P.; Wood, Gary L. (Sensors and Electron Devices Directorate, ARL) Anderson, Richard J. (National Science Foundation); Salamo, Gregory J. (University of Arkansas):3-D Holographic Display Using Strontium Barium Niobate. Army Research Laboratory, Adelphi, MD 20783-1197, ARL-TR-1520. February 1998.

<sup>32</sup> VIJAYALAKSHMI, R.; RAJENDRAN, V. (Department of Physics, Presidency College, Chennai, TamilNadu, India): SYNTHESIS AND CHARACTERIZATION OF CUBIC BaTiO<sub>3</sub> NANORODS VIA FACILE HYDROTHERMAL METHOD AND THEIR OPTICAL PROPERTIES. Digest Journal of Nanomaterials and Biostructures. Vol. 5, No 2, May 2010, p. 511 – 517.

- The up-conversion of absorbed photons would take two photons of a defined frequency and convert it to one of a higher frequency, resulting in disruption of cell communication and maybe cause cell damage due to the higher energy of the single resulting photon.
- The refraction would geometrically disorder bidirectional bio-photon-waves before being established.
- The disorder induced regarding the non-linear qualities of second and third order could possibly alter the entire blueprint of nature causing pseudo-genetic deformations.

To understand the quantitative relationship between this special type of opacity the nano-crystals creates and the harm done to the plants, it is useful to have a look at the optical density the particles may create in the plant. 1 kg dried organic matter equals a volume of about  $3 \text{ l} = 0,003 \text{ m}^3$  living organic matter. The average distance of plant DNA resp. cell diameter is about 0,75 mm. This means that in a plant containing 70 mg (Ba, Sr<sub>x</sub>) TiO<sub>3</sub> per kg dried organic matter the optical density of the nano-particles would be high enough to even interrupt the communication of directly neighboring cells. 35 mg would disrupt at a distance of 0,125 mm, 3,5 mg would disrupt on a distance of 1,25 cm, and so forth.

### 3.2. Effects on plankton

Phytoplankton builds up a very high-organized biotope that mainly covers the upper layer of the oceans. Phytoplankton is the basis for all life in the oceans.

Bringing nano-crystals into the ocean by rain would lead to a distribution within the storm wave horizon, the layer that is practically identically with the layer that is reached by sunlight.

Due to their size the particles would hardly sink further down. Due to the comparable long distanced between single cells phyto-plankton-organisms this could very quickly lead to a concentration of nano-crystals that would be high enough to interrupt parts of the cell communication between single phytoplankton cells.

If in means of bio-photons the phytoplankton is reacting as one biological unit deriving the impulse for cell division from the bio-photon exchange within the biotope, the discussed nano-crystals could eventually reduce or dis-balance the production of biomass in the oceans and thereby affect the marine food resources.

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<sup>33</sup> Compare to entire concept - Sarney, Wendy L.; Olver, Kimberley A.; Little, John W. (Sensors and Electron Devices Directorate, ARL); Livingston, Frank E. (The Aerospace Corporation), Niesz, Kriszian; Morse, Daniel E. (Institute for Collaborative Biotechnologies, University of California, Santa Barbara): Progress in Materials Synthesis and Processing of Barium Titanium Oxide (BaTiO<sub>3</sub>) and Barium Strontium Titanium Oxide (Ba, Sr<sub>x</sub>) TiO<sub>3</sub> Films for Uncooled Infrared (IR) Detector Applications. Army Research Laboratory, December 2011. P. 9.

### 3.3. Effects on mammals and humans

A study in North America has examined the impact of the combination of natural occurring barium, pollution by barium-rich drilling mud from the oil/gas industry and explicitly of piezoelectric nano-crystals from aerosols on mammals. In this regions of North America spraying is conducted mainly to enhance/refract radar signals for military purposes. The study could prove the connection to neuronal diseases like the chronic waste disease (CWD) and transmissible spongiform encephalopathies (TSEs). It examined both the chemical toxicity of silver, barium and strontium which bio-concentrate in the food chain as of the more complex mechanisms connected to the nano-crystals from aerosol spraying. In the examined cases the piezoelectric properties were believed to be triggered also by acoustic pressure energy from incoming low frequency shock bursts from low flying jets, explosions, earthquakes, etc., additionally to high frequent electromagnetic fields. However, the mechanism of damage coming from excited piezoelectric crystals should be the same. Because of the precisely described biochemical processes I here render the full abstract:

High levels of Silver (Ag), Barium (Ba) and Strontium (Sr) and low levels of copper (Cu) have been measured in the antlers, soils and pastures of the deer that are thriving in the chronic wasting disease (CWD) cluster zones in North America in relation to the areas where CWD and other transmissible spongiform encephalopathies (TSEs) have not been reported. The elevations of Ag, Ba and Sr were thought to originate from both natural geochemical and artificial pollutant sources--stemming from the common practise of aerial spraying with 'cloud seeding' Ag or Ba crystal nuclei for rain making in these drought prone areas of North America, the atmospheric spraying with Ba based aerosols for enhancing/refracting radar and radio signal communications as well as the spreading of waste Ba drilling mud from the local oil/gas well industry across pastureland. These metals have subsequently bioconcentrated up the foodchain and into the mammals who are dependent upon the local Cu deficient ecosystems. A dual eco-prerequisite theory is proposed on the aetiology of TSEs which is based upon an Ag, Ba, Sr or Mn replacement binding at the vacant Cu/Zn domains on the cellular prion protein (PrP)/sulphated proteoglycan molecules which impairs the capacities of the brain to protect itself against incoming shockbursts of sound and light energy. Ag/Ba/Sr chelation of free sulphur within the bio system inhibits the viable synthesis of the sulphur dependent proteoglycans, which results in the overall collapse of the Cu mediated conduction of electric signals along the PrP-proteoglycan signalling pathways; ultimately disrupting GABA type inhibitory currents at the synapses/end plates of the auditory/circadian regulated circuitry, as well as disrupting proteoglycan co-regulation of the growth factor signalling systems which maintain the structural integrity of the nervous system. The resulting Ag, Ba, Sr or Mn based compounds seed piezoelectric crystals which incorporate PrP and ferritin into their structure. These ferrimagnetically ordered crystals multireplicate and choke up the PrP-proteoglycan conduits of electrical conduction throughout the CNS. The second stage of pathogenesis comes into play when the pressure energy from incoming shock bursts of low frequency acoustic waves from low fly jets, explosions, earthquakes, etc. (a key eco-characteristic of TSE cluster environments) are absorbed by the rogue 'piezoelectric' crystals, which duly convert the mechanical pressure energy into an electrical energy which accumulates in the crystal-PrP-ferritin aggregates (the fibrils) until a point of 'saturation polarization' is reached. Magnetic fields are generated on the crystal surface, which initiate chain reactions of deleterious free radical mediated spongiform neurodegeneration in surrounding tissues. Since Ag, Ba, Sr or Mn based piezoelectric crystals are heat resistant and carry a magnetic field

inducing pathogenic capacity, it is proposed that these ferroelectric crystal pollutants represent the transmissible, pathogenic agents that initiate TSE.<sup>34</sup>

Following another article describing effects on humans, the bio-concentration in the food chain does not even need to reach dangerous concentrations – a single act of geo-engineering can be already too much: In November 2010 after a snowy day in Aachen, a town in North-West-Germany, the healing practitioner Wolfgang Creyaufmüller<sup>35</sup> registered a widespread appearance of headaches among his patients. They could not be successfully treated with recipe-free painkillers like ASS, Paracetamol or Ibuprofen.

As a healing practitioner he was using bio-field-measurement with the nosode FSME as part of his diagnostics. The device is measuring bio-photon activity of the human body. All patients with the abnormal headaches showed significantly weakened bio-photon fields.

He knew that normally snow has a positive effect on bio-photon activity of humans – supporting the levels of humans and being at +8 on the scale itself. So he went out measuring the snow and found a bio-photon activity of -8 on the snow surface. As an anti-nuclear power activist he has been following up the contamination deriving from the Chernobyl accident for years. He expected some radioactive fallout, thus he decided to have chemical analysis conducted of the snow. However, the snow instead showed high levels of barium isotopes instead which could not be related to any known nuclear accident.

If the source of the barium was barium-strontium-titanate, this would prove the ability of these nano-crystals to absorb bio-photons. Also, it would show that not only plants might be affected by the interruption of bio-photon activity, but humans who apparently feed their bio-photon field with refracted (polarized) sunlight. Additionally, it would hint to the ability of nano-crystals to affect life on the continents in a way similar to the effects suspected for plankton. This could regard all biotopes, when being optically open and interconnected systems.

#### 4. Irradiation of plant DNA with high energy UV light

In chapter 2 we introduced the concept of bio-photons as a pattern of bi-directional waves and their time reversed replica waves sent and received by DNA-molecules.

It is known that particles in clouds can be excited by absorbing incoming cosmic radiation and that they can later release this radiation in form of gamma quanta. Especially heavy

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<sup>34</sup> Purdey M.: Elevated silver, barium and strontium in antlers, vegetation and soils sourced from CWD cluster areas: do Ag/Ba/Sr piezoelectric crystals represent the transmissible pathogenic agent in TSEs? US PubMed, [http://www.ncbi.nlm.nih.gov/pubmed/15236778?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed\\_ResultsPanel.Pubmed\\_DiscoveryPanel.Pubmed\\_Discovery\\_RA&linkpos=1&log\\$=relatedarticles&logdbfrom=pubmed](http://www.ncbi.nlm.nih.gov/pubmed/15236778?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_Discovery_RA&linkpos=1&log$=relatedarticles&logdbfrom=pubmed) on Dec. 16<sup>th</sup> 2012.

<sup>35</sup> Wolfgang Creyaufmüller: Wie kommt Barium ins Regenwasser? Aachen Online at [www.sauberer-himmel.de](http://www.sauberer-himmel.de) November the 17th 2012.



nuclei like barium and strontium can hold this excited state for quite a long time. The release of gamma quanta can happen spontaneously or be triggered by an incoming photon.

The high-energy photons stored can be released by non-linear optical interaction when a bio-photon hits a nano-crystal. The excited state of the nuclides then might discharge into a time reversed replica wave precisely flowing back to the DNA. Thus it would expose it to light of same wavelength but much higher energy.

High energy UV radiation is known to be the main source for plant DNA damage. The involvement of excited nuclides into a bio-photon exchange could lead to a directed release of stored gamma quanta inside the plant irradiating the DNA.

This negentropic process redirecting high amounts of energy back onto a weak triggering source actually is the main characteristic of non-linear optical systems. For full understanding I have to refer to the articles in the footnotes<sup>36, 37, 38, 39, 40, 41, 42, 43, 44</sup>.

## 5. Setting the electromagnetic cell potential of plants out of balance

The immune system of all cells follows a highly defined curve of electromagnetic cell potential. Cells have defined potential differences between the core and the inner membrane surface as well as between the inner and outer cell membrane surface. Any alteration of these cell potentials weakens the "immune system" by disturbing the equilibrium of oxidant and antioxidant processes.

Barium-strontium-titanate, as a piezoelectric substance, changes its crystal geometry when exposed to external electromagnetic fields<sup>45</sup>. Any change in crystallographic structure is accompanied by a release/absorption of electrons.

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<sup>36</sup> E. T. Whittaker, "On the partial differential equations of mathematical physics," *Mathematische Annalen*, Vol. 57, 1903, p. 333-355. 11 V.K. Ignatovich, "The remarkable capabilities of recursive relations," *American Journal of Physics*, 57(10), Oct. 1989, p. 873-878.

<sup>37</sup> E. T. Whittaker, "On an expression of the electromagnetic field due to electrons by means of two scalar potential functions," *Proceedings of the London Mathematical Society, Series 2*, Vol. 1, 1904, p. 367-372.

<sup>38</sup> T. E. Bearden and Walter Rosenthal, "On a testable unification of electromagnetics, general relativity, and quantum mechanics, Proceedings of the 26th Intersociety Energy Conversion Engineering Conference (IECEC '91), Aug. 4-9, 1991, Boston, Massachusetts, p. 487-492.

<sup>39</sup> Floyd Sweet and T. E. Bearden, "Utilizing scalar electromagnetics to tap vacuum energy," *Proceedings of the 26th Intersociety Energy Conversion Engineering Conference (IECEC '91), Aug. 4-9, 1991, Boston, Massachusetts, p. 370-375.*

<sup>40</sup> Carl Barus, "A curious inversion in the wave mechanism of the electromagnetic theory of light," *American Journal of Science*, Vol. 5, Fourth Series, May 1898, p. 343-348.

<sup>41</sup> Amnon Yariv, *Optical Electronics*, 3rd edn., Holt, Rinehart and Winston, New York, 1985. Chapter 16: "Phase Conjugate Optics -- Theory and Applications."

<sup>42</sup> David M. Pepper, "Nonlinear optical phase conjugation," *Optical Engineering*, 21(2), March/April 1982, p. 156-183. On p. 156

<sup>43</sup> See also David M. Pepper, "Applications of optical phase conjugation," *Scientific American*, 254(1), Jan. 1986, p. 74-83. See particularly the striking photographic demonstration of time reversal of disorder on p. 75.

<sup>44</sup> Robert G. Sachs, *The Physics of Time Reversal*, University of Chicago Press, Chicago, Illinois, 1987.



With regards to barium-strontium-titanate used as aerosols in the atmosphere, this effect could be used to “switch” clouds “on and off” by applying electromagnetic fields as used by HAARP and ICECAT devices or other microwave-radiating antenna systems. These research- and military installations have equipment with sufficient strength to alter the crystal geometry of the barium-strontium-titanate, which in turn leads to free current that would charge the aerosol particle creating an ion. An ion will attract vapor and instantly lead to the forming of a droplet in the cloud.

The nano-crystals remain unchanged when absorbed by plants. One would therefore the same effect to happen when a plant is hit by low and high frequency radiation.

In other words terrestrial mobile, WIFI, microwave or radar transmission as well as the EMF-pollution by power lines and transformer stations would be expected to cause a spontaneous release of free electrons, which would alter the cell potential and thus weaken the immune-system of the plant.

## 6. Alternative mechanisms of damage discussed

### 6.1. Aluminum Oxide

In public discussions about the damage done by the fallout of aerosols from geo-engineering aluminum is often mentioned as being harmful for plants. In this discussion many things are presented in a not so precise way.  $\text{Al}_2\text{O}_3$  as mentioned in geo-engineering-patents forms thin flitters in the range of 10-100 micron. This is not nano-size. The presence of  $\text{Al}_2\text{O}_3$  in the rain brings the rain into the alkaline state. Often it is stated that it turns the rain acid. This is not correct. If rain is coming down acid this is not related to  $\text{Al}_2\text{O}_3$ .

Acid rain is rainwater with acidity below 5.5, which would be the natural acidity in equilibrium with the natural  $\text{CO}_2$  content of the air. Acid rain is caused by  $\text{H}_2\text{SO}_4$  and  $\text{H}_2\text{NO}_3$  build from  $\text{NO}_2$  and  $\text{SO}_2$  and excess  $\text{H}_2\text{CO}_3$  from  $\text{CO}_2$  released by burning fossil fuels. This acid agents can damage plants directly via fog, which takes up a lot of them from the air, or indirectly via the rain reaching the ground. The accumulating acidity in the ground releases toxic heavy metals that destroy the small roots of the trees and thus disturb the uptake of minerals.

The misunderstanding with  $\text{Al}_2\text{O}_3$  causing acid rain happens because the acid rain brings the  $\text{Al}_2\text{O}_3$  in the soils into solution. The mechanism is a bit complex:  $\text{Al}_2\text{O}_3$  as well as the heavy metals damaging plants occur as a mineralogical unit with the  $\text{SiO}_2$  in clays and many other minerals. The acid rain mainly dissolves  $\text{SiO}_2$ . Thus  $\text{Al}_2\text{O}_3$  is being released in a bioavailable form. As a result, acid rain can lead to an intoxication of plants with bioavailable aluminum.

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<sup>45</sup> Wada, S.; Tsurumi, T.: Enhanced piezoelectricity of barium titanate single crystals with engineered domain configuration. British Ceramic Transactions, 2004, Vol. 103, No. 2.

Actually, this release of  $\text{Al}_2\text{O}_3$  is part of the self-regulation mechanism that protects the soils from getting too acid by acid rain. The release of  $\text{Al}_2\text{O}_3$  is a comparable low price the bio-systems have to pay for acid rain. Direct deposition of  $\text{Al}_2\text{O}_3$  in combination with acid rain would help to balance the acidity and would be chemically not harmful for nature.

Direct deposition on soils who are too alkaline in tendency could do some damage. Also, the alkalinity of the rainwater could do some damage when getting in touch directly with the leaves.

According to a former military researcher of the German Army a different threat by aluminum could occur if the micro-particles, which are very thin, instead of going into solution would break down to even smaller particles while deposited in the soil. These particles could then be taken up by the roots as nano-crystals and alter the acidity in the plants as well as mechanically harm the plants by blocking the capillary system.

There is some concern about  $\text{Al}_2\text{O}_3$  concentration in grass when it comes to cattle. Titanite has been found being correlated to high amounts of  $\text{Al}_2\text{O}_3$  in the cows stomachs. Values were at 6000 mg/kg in average when being lethal. However these values are far beyond any countrywide average of aluminum in grass, values of 200 mg/kg have been regarded to as being "high". Thus a connection of this kind of occurrence to geo-engineering should be encountered as non-existent.

## 6.2. Calcium Fluoride

One single rainwater analysis from Italy revealed calcium fluoride crystals. Standard chemical analyses focuses on metals. Fluor is normally not measured, and the values for calcium can be high for many reasons. Calcium carbonate is a very common mineral. Maybe this is the reason why this component has been overseen.

The electromagnetic properties of barium-titanate predestine the nano-crystals to play a special role in geo-engineering. The optical and electromagnetic properties of calcium fluoride could reveal a second class of nano-crystals that could be of importance. Applying electromagnetic fields onto calcium fluoride nano-crystals turns the calcium fluoride being magnetic. This would support the fusion of small droplets in the cloud creating raindrops.

These particles could be utilized to make an aerosol-based cloud rain on command. All it needs are antenna systems applying those fields. Then it would be possible to control the exact geographic place and amount of rain. The single particles will once magnetized attract each other and that will support the fusion of small droplets to bigger raindrops. In other words if you have a  $\text{CaF}_2$  aerosol based cloud and you expose it to electromagnetic fields, the result will be rain. The capacity to create such electromagnetic field close to anywhere on the northern hemisphere is given through the powerful HAARP plant and similar installations.

Rain coming down after the appearance of persistent contrails has been reported being very acid. This could be related to  $H_2F$ .

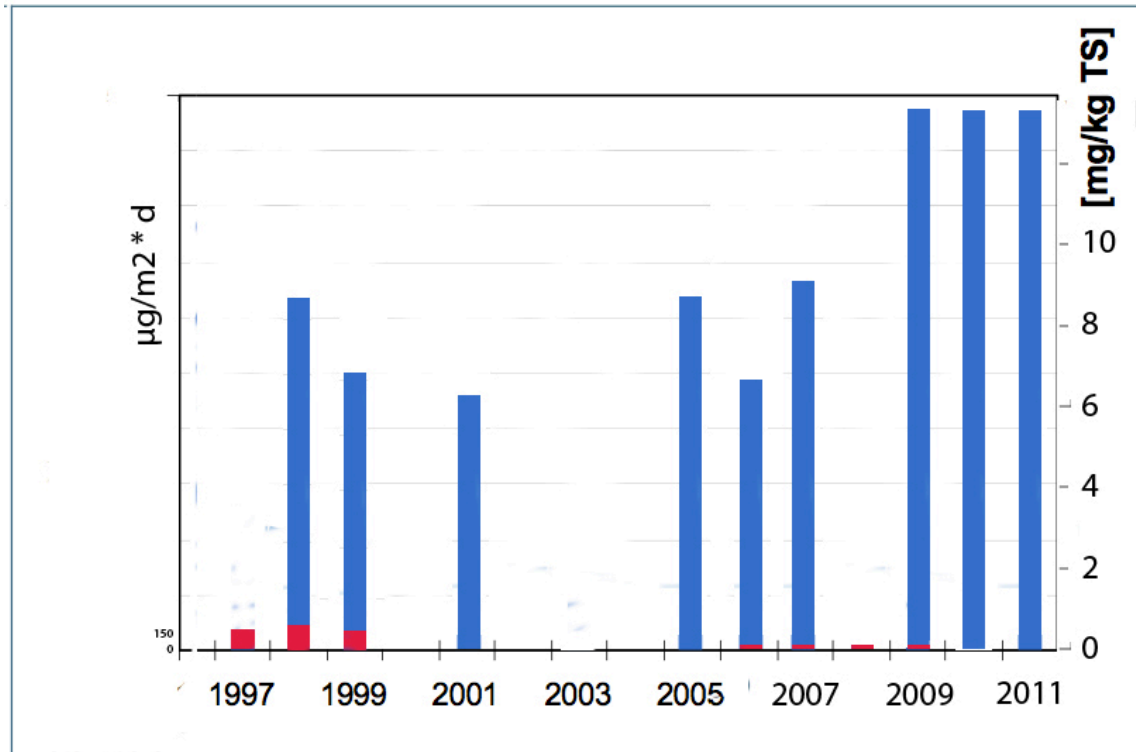
## 7. Atmospheric Barium-Deposition in Germany

The review of the official barium deposit measurements showed a *decrease* in dry deposition by 95% and an extrapolated *increase* of wet depositions by 100% during the last 15 years. This complete opposite development is remarkable. Dry deposition is associated to industrial pollution and uptake from the ground. Wet deposition is associated to aerosols.

During the last decades various state institutes have analyzed rainwater, dry atmospheric deposition (dust) and heavy metal content in organic matter, mainly by testing standardized grass samples grown for a period of 4 weeks to detect wet and dry atmospheric deposition of pollutants. This study refers mainly to publications of the Landesumweltamt Brandenburg and the Bayerisches Landesamt für Umwelt, two regional state authorities, and a few minor sources like ash analyses of bio-mass power-plants run on grass. These measurements are available up to the year 2011. Due to the fact that the national Bundesumweltamt today only fulfills the “UN ECE Convention on long-range transboundary pollution” and the EU law “Richtline 2008/50EG from May 2008” the national institutions are not monitoring barium, strontium and titanium. Therefore we made some statistics on 60 available rain samples taken by private persons analyzed in certificated labs. These samples were collected and controlled by the initiative “Sauberer Himmel e.V.”.

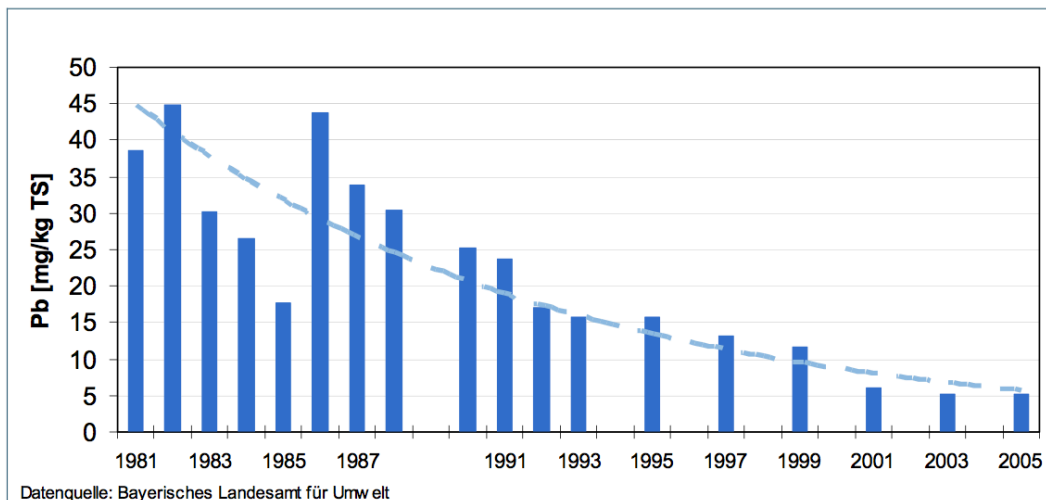
To make the different data comparable the unit “total deposit per year on the territory of Germany” was chosen. With rain samples the long year average of  $750 \text{ l/m}^2$  was used, with grass the average harvest of 3.5 t hay per hectare and year, estimating that the growth period is about 6 month, so this multiplies the value of the 4-week-experiment the data are based on by 6. With dry deposition the values have just to be multiplied with the total territory of  $357127 \text{ km}^2$ .

The data show that – taking maximum values – about 90% of the heavy metals are deposited wet (rain samples/grass analysis), only 10% as dust. Since 1997 this dry deposition was reduced down to about 5% of the previous values. The following graph shows the values for barium and titanium in the last 16 years.



Dry (red) and wet (blue) deposition of barium measured in its real relative ratio compared via t/d on Germany. Graph by the Authors.

These findings need to be reviewed against the background of strongly reduced pollution by all other metals. The following graph shows lead as an example.



Lead in  $\text{mg}/\text{kg}$  dried grass samples (wet deposition) over the last 3 decades.

Strontium and titanium have hardly ever been measured by the official authorities thus it is difficult to relate to it. Due to the fact that the dry deposition of Barium was reduced in a similar way to most other pollutants it becomes obvious, that the wet deposition is not connected to industrial pollution or aerosols taken up from the ground. The high amounts

of Barium seem to come straight with the rain – which hints to high-altitude-aerosols as a source and thus to geo-engineering.

The statistical evaluation of 70 rainwater samples by the author, gathered by the German “initiative for a clean sky”<sup>46</sup>, indicates an amount of approx. 911 tons of barium falling out over Germany during the year 2012. The grass samples hint to rather 1625 t in 2011, however this amount should also contain the dry deposition as well as some barium taken up by the plants from the soil originating from mineral substrate.

To summarize and calculate: If the original source of industrial barium pollution has been reduced by 90 % during the 15 years as shown by the values for dry deposition, and the overall values went up by intermediated 100% since 2001, there is no other explanation than a new source that is explicitly connected to aerosols brought down by wet deposition. This new source then should cover 95% of the total values in the year 2012. Therefore one should assume an atmospheric deposition of 865 t originating from aerosols coming down with the rain from high altitudes. This calculation is based on the statistical evaluation of thousands of single measurements collected by the state authorities and therefore has to be regarded as accurate.

This calculation is valid for barium as an element. There is no basis for a calculation showing what percentage of this barium was deposited as barium-strontium-titanate.

Indicating (Ba, Sr<sub>x</sub>) TiO<sub>3</sub> in nature is very difficult. Measurements of bioavailable barium, strontium and titanium indicate elements in solution but due to the non-solubility of (Ba, Sr<sub>x</sub>) TiO<sub>3</sub> do not indicate the nano-crystals at all. An analysis of the total mineral content would correctly show Ba, Sr and Ti as single elements but still delivers no proof of the existence of the nano-crystals as a whole. It can only give a maximum possible content defined by the element with the lowest relative ratio. Optical analysis with the microscope can proof the existence of the nano-crystal within plant cell tissue but would need time-consuming statistics on thousands of single crystal measurements to make any quantitative statements.

Only the direct comparison of bioavailable and total mineral content of the same sample would deliver valid data about crystalline mineral content. Such data are not available from regular sources. The testing done by state authorities is not designed to detect nano-crystals in particular.

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<sup>46</sup> <http://www.sauberer-himmel.de>

## 8. Research in Norway

During the second half of the year 2012 farmers at the east coast of Oslo Fjord in Norway have been complaining about a significant slowing down of grass-growth, which reduced the second harvest of hay.

Samples of grass taken by the author in the Oslo area, which significantly was being slowed down in growth rate, showed in lab analysis

Aluminum:	176 mg/kg
Barium:	49 mg/kg
Strontium:	69 mg/kg
Titanium:	28 mg/kg <sup>47</sup>

These values of barium, strontium and titanium have in a relative molar concentration that points to a maximum of 35 mg nano-crystalline barium-strontium-titanate per kg dried organic matter – if the entire amount of barium originates from barium-strontium-titanate. The limiting factor in this case is the titanium.

Grass samples were collected all over Norway by the Norwegian Veterinarian Institute. This project has yet to be published, however our samples fall within the average of their study.

The standard measurement of air pollutants in Scandinavia is done with moss of the type *Hylocomium Splendens*, not with grass. This makes it a bit difficult to compare data with Germany. *Hylocomium Splendens* does not use roots for uptake of water or nutrients, so it takes up only dry and wet deposition. Large-scale investigations have been conducted in 1977, 1985 and since then every 5 years evaluating 464 locations all over Norway. From each place 5 to 10 samples from an area of 50x50 meter have been taken, minimum 300 meter from main roads and houses. 42 elements including Sr, Ba and Ti have been tested.<sup>48</sup>

Aluminum median values	1977 with 720 mg/kg, in 2010 showing 280 mg/kg
Titanium first measured in	1995 with 43 mg/kg, in 2010 showing 25 mg/kg
Strontium first measured in	1990 with 13 mg/kg, in 2010 showing 15 mg/kg
Barium first measured in	1990 with 24 mg/kg, in 2010 showing 25 mg/kg

Like in Germany we have a sharp decrease in industrial pollutants like aluminum and titanium, and a slight increase in substances associated with geo-engineering.

However these values are average values with very high local variations:

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<sup>47</sup> Analysis: University of Ås, Norway.

<sup>48</sup> Atmosfærisk nedfall av tungmetaller i Norge – Landsomfattende undersøkelse i 2010 (TA-2859/2011)

Aluminum showed in	2005 values between	58 - 12121
	2010 values between	46 - 4581
Titanium showed in	2010 values between	4 - 260
Strontium showed in	2010 values between	1,9 - 72
Barium showed in	2000 values between	4,3 - 217
	2005 values between	4,2 - 119
	2010 values between	4 - 325

The big differences in values were encountered to either be the result of salt deposition from the Atlantic or a result from the uptake of soil from mineral-rich soils.

According to grass samples the total deposition of Barium in Norway is 4 times higher than in Germany. Especially the comparison of Barium and Strontium values show, that these high values are mainly linked to geographic anomalies. Knowing these two facts it is likely that amounts of aerosols comparable to Germany could easily "hide" in these values.

Discussing the single sample taken by the authors: To determine if the values of barium were high because of the soil quality or because of atmospheric input the authors analyzed the soil (on which the analyzed grass was growing on) and compared it to soil from the same field at a spot where it was covered by a barn since at least 60 years. The comparison showed that the soil not exposed to rain was higher in all measured metals except one. This seems to be logical: evaporation brings all kinds of minerals up, no rain washes them out, and no plant material has been removed which would have lowered the soils mineral content. The exception was Barium. That was measured higher outside on the open field. The input by fertilizers used was controlled and showed no barium content on the label. Titanium and Strontium were not measured in these samples. The Oslo Fjord seems to be too narrow and quiet to be responsible for the uptake and deposition of high amounts of minerals. The farm was located about 60 km from the coast.

Metal/Soil sample		not exposed/exposed to rain	
Aluminum	mg/kg	25.150	22.900
Barium	mg/kg	140	155
Lead	mg/kg	29	16
Arsenium	mg/kg	4,8	2,8
Cadmium	mg/kg	0,28	0,18
Nickel	mg/kg	21	20
Palladium	mg/kg	<5	<5

This clearly indicates that the source of the Barium is not only from the soil but also from wet atmospheric deposition.

## 9. Politics, infrastructure and possible military use

Trying to find out what actually is happening in the field of geo-engineering is not easy. The structure one meets is onion-like. There is an official surface that is moving big money in research but projecting practical geo-engineering mainly into the future. But even if one looks behind the scene, listens to the statements of whistleblowers and reads secret documents that were unintentionally exposed to public, there is not one coherent truth but again onion like layers to be found.

The outer onionskin looks like this: Geo-engineering was first thought of in pre WWII Germany. Most ideas were gigantomaniac but rather grounded, like cutting of and drying out the Mediterranean to harvest land and set up a water power plant to supply the entire area with electricity. Some of that engineering spirit came to the US after the war. Operation *Paperclip* recruited German top researches to serve the US-military. The targets publicly discussed were rather peaceful. Like preventing hurricanes and hale, directing rain to guarantee harvests.

In 1964 the American National Science Foundation called in a special commission on weather manipulation. However, the first practical applications turned out to be less peaceful. It was the cloud seeding conducted in North Vietnam to enhance monsoon rains and flood the jungle to cut the Vietcong of from supplies.

The first notable document relating to the form of cloud seeding discussed in this paper is the Welsbach patent in 1986. It is the first patent suggesting the spraying of aluminum oxide and metal salts to combat climate change. Since then more follow up patents have been filed that cover the entire technical process of cloud seeding by aerosol spraying from both civil and military airplanes.

In 1990 the US Government entered a phase of intensive research into Geo-Engineering with the "Global Change Research Act"<sup>49</sup>.

In 2001, President elect George W. Bush established the (CCRI) Climate Change Research Initiative. A year later it was made public that the USGCRP or United States Global Change Research program and the CCRI both would become what is known as the (CCSP) Climate Change Science Program. Now, under the Obama Administration the legacy continues to move forward as the USGCRP, with a yearly budget of 2.7 billion dollars.<sup>50</sup> An insight into these programs reveals that most of it is about combating not monitoring climate change.

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<sup>49</sup> Official government website: <http://www.gcric.org/gcact1990.html>

<sup>50</sup> Shepard Ambellas & Avalon: *The Budget Obama Didn't Want You To Know About*. the intelhub.com, March 30, 2011. Online at: <http://theintelhub.com/2011/03/30/secret-presidential-chemtrail-budget-uncovered-exceeds-billions-to-spray-populations-like-roaches/> on Nov. 22nd 2012.



The newest kid on the block is the US Department of Homeland Security, which intends to set up the "Hurricane Aerosol and Microphysics Program"<sup>51</sup>.

In 2012 US-scientists targeted "a affordable price of below 5 billion a year" to "blow a million of tons" into altitudes of 18 miles<sup>52</sup>.

All these sources refer to man made climate change as the problem to be solved by geo-engineering. Climate change is believed to be caused mainly by CO<sub>2</sub>. This is the outer skin of the onion.

As soon as we go to pre-climate-change-times, things look a bit different. Jim Phelbs had been working for many years at the Oak Ridge National Laboratories researching the ozone hole and other air-pollution related problems. Global warming was already known back then. However it was not dramatizes and mainly related to fluor- and sulfur-emissions from jet fuel. Fluor and sulfur, creating the aggressive HF and H<sub>2</sub>SO<sub>4</sub> acid in the clouds, was regarded as the main cause for acid rain. Both sulfur and fluor compound were regarded as a reason for the increasing persistence of contrails as well as of the appearance of more high altitude cirrus clouds. These clouds were believed to hold back infrared radiation and cause global warming.

To prevent damage done by especially fluor, that formed toxic aluminum-fluor compounds once raining down, he suggested adding TiO<sub>2</sub> to the jet fuel to bind the fluor to metals that form less toxic compounds. Phelbs not only tried to alter the acidity and toxicity of fluor compounds, he also tried to readjust the thermal properties of contrails and contrail-based cirrus clouds by introducing Al<sub>2</sub>O<sub>3</sub> as a fuel additive.

As to the military branch of geo-engineering, there are only a few sources, mainly ex employees of various agencies.

We can trace the beginnings of military Spraying-Operations also referred to the Project Cloverleaf right to Dr. Edward Teller, father of the hydrogen bomb and proponent of nuking inhabited coast lines to rearrange them for economic projects<sup>53</sup>. Before he died in 2003, Teller was director emeritus of Lawrence Livermore National Laboratory, where plans for nuclear, biological and directed energy weapons are crafted. In 1997, Teller publicly outlined his proposal to use aircraft to scatter in the stratosphere millions of tons of electrically-conductive metallic materials, ostensibly to reduce global warming<sup>54</sup>.

Shortly after Teller's presentation, the public began seeing frenetic chemtrailing. In 2000, CBS News admitted that scientists were "looking at drastic solutions for global warming, including manipulating the

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<sup>51</sup> Richard W. Spinrad to William Laska, "Response to Statement of Work: Hurricane Aerosol and Microphysics Program," US Department of Commerce, National Oceanic and Atmospheric Administration, Silver Springs, MD, July 29, 2009, [http://voices.washingtonpost.com/capitalweathergang/noaa\\_letter\\_dhs\\_hurricane\\_modification.pdf](http://voices.washingtonpost.com/capitalweathergang/noaa_letter_dhs_hurricane_modification.pdf)

<sup>52</sup> Allister Doyle and David Fogarty, "'Sunshade' to Fight Climate Change Costed at \$5 Billion Year," Reuters, August 31, 2012, <http://in.reuters.com/article/2012/08/30/climate-sunshade-idINDEE87T0K420120830>

<sup>53</sup> Begich and Manning, op. cit. p. 51

<sup>54</sup> Global Warming and Ice Ages: Prospects for Physics-Based Modulation of Global Change, Edward Teller and Lowell Wood, Hoover Institution, Stanford University, prepared for invited presentation at the International Seminar On Planetary Emergencies, Erice, Italy, August 20-23, 1997; also "The Planet Needs a Sunscreen," Wall Street Journal, 10-17-97.

atmosphere on a massive scale." CBS confirmed that the plan to load the air with tiny particles would "deflect enough sunlight to trigger global cooling."<sup>55</sup>

Teller estimated that commercial aircraft could be used to spew these particles at a cost of 33 cents a pound<sup>56</sup>. This gives credence to a report by an airline manager, forced by a compulsory non-disclosure agreement to remain anonymous, that commercial aircraft have been co-opted to assist the military in consummating Project Cloverleaf<sup>57</sup>. A 1991 Hughes aircraft patent confirms that sunscreen particulate materials can be run through jet engines<sup>58</sup>. A science textbook now used in some public schools discusses the sunscreen project by showing a large orange-red jet with the caption, "Jet engines running on richer fuel would add particles to the atmosphere to create a sunscreen." The logo on the plane says "Particle Air."<sup>59</sup> The implications of this crucial information should not be understated. A program to make America's millions of annual jet flights a source of specially designed particulate pollution is serious business.<sup>60</sup>

A different story is told by A. C. Griffith<sup>61</sup>, an NSA, later CIA employee who uncovered his truth on the Monday edition of the power hour, a national broadcast show. Another onionskin. Griffith served at the Ray Patterson Air force base, which he called the headquarter of US chemtrailing programs. Griffith referees to an ongoing cold war between Russia and the US utilizing scalar weapons. The worst incident of this cold war was – according to the ex US military Col. Tom Bearden, whom Griffith cites on the radio show –, the attempt of Russia to trigger an earthquake in the St. Andreas fault with the Ukraine based Woodpecker devices (long range micro-wave transmitters), that were fed with electricity by the Chernobyl power stations. According to Griffith, the attack was staved of with the help of Israel, thus causing what is known as the Chernobyl accident. Griffith sees the US being behind other countries in the development of these weapons as well as of possible defense systems. Against this background he describes the development of chemtrail-programs as a necessary defense system developed by the CIA/NSA intelligence community. The CIA, that had been operating a major aircraft fleet for drug trade to finance their unofficial activities, must have been running out of spraying capacities and tried to involve the Navy. Admiral Jeremia Border, Chef of US-Navy Operations, refused to join into the program and officially committed suicide by shooting

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<sup>55</sup> Official announcement online at <http://www.globalchange.gov/about/program-structure/global-change-research-act> Nov. 22nd 2012. CBS News Eye on America Report : Cooling the Planet in two parts: 1-15-01 and 1-16-01.

<sup>56</sup> Teller and Wood, op. cit.

<sup>57</sup> "An Airline Manager's Statement," Posted by C.E. Carnicom on behalf of the author, 5-22-00. Quote: "The few airline employees who were briefed on Project Cloverleaf were all made to undergo background checks, and before we were briefed on it we were made to sign non-disclosure agreements which basically state that if we tell anyone what we know we could be imprisoned....They told us that the government was going to pay our airline, along with others, to release special chemicals from commercial aircraft....When we asked them why didn't they just rig military aircraft to spray these chemicals, they stated that there weren't enough military aircraft available to release chemicals on such a large basis as needs to be done....Then someone asked why all the secrecy. The government reps then stated that if the general public knew that the aircraft they were flying on were releasing chemicals into the air, environmentalist groups would raise hell and demand the spraying stop."

<sup>58</sup> US patent 5003186; Stratospheric Welsbach Seeding for Reduction of Global Warming, Hughes Aircraft Company, issued March 26, 1991"

<sup>59</sup> Secondary school text book: Science I Essential Interactions, published by Centre Point Learning, Inc. of Fairfield, Ohio. See "Chemtrail Sunscreen Taught in Schools," William Thomas, [www.willthomas.net](http://www.willthomas.net).

<sup>60</sup> Amy Worthington: Aerosol and Electromagnetic Weapons in the Age of Nuclear War. Global Research | June 1, 2004

<sup>61</sup> <http://www.youtube.com/watch?v=rS3mVg7GIGI>

himself twice into the chest. Since then the navy is part of the referred Project Cloverleaf. To explain the role of aerosols Griffith referred to a paper by Matthew Daggett with the title "Atmospheric sensitivity invalidation study of the variable terrain radio parabolic equation model", describing a 3D battlefield radar monitoring system that could be operated from a ship 400 miles off the shore by using barium-salts as a reflective aerosol. Griffith also mentioned DARPA and other agencies as possibly joining in to make use of the aerosol spraying for different purposes.

It is rather easy to see that Griffith doesn't connect the dots in a logical way, even if the details can be confirmed as being valid. At least 3D battlefield radar has no value if one is attacked with scalar applications.

On the next layer one might discover the interconnection between the civil and company-based research done with HAARP, ICECAT and similar microwave transmitting devices and aerosol spraying – assuming that this is the direction Griffith should have been pointing to.

According to University of Ottawa Professor Michael Chossudovsky, the military's High-frequency Active Auroral Research Program (HAARP), operating in Alaska as part of the Strategic Defense Initiative, is a powerful tool for weather and climate modification<sup>62</sup>. Operated jointly by the U.S. Navy and Air Force, HAARP antennas bombard and heat the ionosphere, causing electromagnetic frequencies to bounce back to earth, penetrating everything living and dead<sup>63</sup>.

HAARP transmissions make holes in the ozone<sup>64</sup>, creating yet another hobgoblin. HAARP inventor Bernard Eastlund described in his original patent how antenna energy can interact with plumes of atmospheric particles, used as a lens or focusing device, to modify weather<sup>65</sup>. HAARP is capable of triggering floods, droughts and hurricanes, much to the chagrin of both the European Parliament and the Russian Duma<sup>66</sup>.

HAARP also generates sweeping pulses through the ULF/ELF range<sup>67</sup>. In 2000, independent researchers monitored HAARP transmissions of 14 hertz. They found that when these signals were broadcast at high output levels, wind speeds topped 70 miles per hour. They watched as these same transmissions dispersed a huge weather front approaching the west coast from California to British Columbia. Although precipitation had been originally forecast, the front was seen shredding apart on satellite photos and rain did not materialize<sup>68</sup>. The hobgoblin drought can be an enriching and empowering tool for certain corporate and governing entities.

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<sup>62</sup> "Washington's New World Order Weapons Have the Ability to Trigger Climate Change," Center for Research on Globalization, Professor Michael Chossudovsky, University of Ottawa, January 2001.

<sup>63</sup> "HAARP: Vandalism in the Sky?" Nick Begich and Jeane Manning, Nexus Magazine, December 1995.

<sup>64</sup> Ibid.; also Castle, op. cit. Dr. Castle presents information on how HAARP punches massive holes in the open-air column ozone and how the Air Force then uses toxic chemicals to "patch" the holes it has created: Dr. Castle says: "Welsbach seeding and ozone hole remediation sciences utilize chemistries that are toxic to humans and the environment."

<sup>65</sup> "HAARP: Vandalism in the Sky?" Begich and Manning; Researcher David Yarrow is quoted as saying that Earth's axial spin means that HAARP bursts are like a microwave knife producing a "long tear--an incision" in the multi-layer membrane of ionospheres that shield the Earth's surface from intense solar radiation.

<sup>66</sup> U.S. HAARP Weapon Development Concerns Russian Duma, Interfax News Agency, 8-10-02.

<sup>67</sup> HAARP Update, Elfrad Group, <http://elfrad.org/2000/Haarp2.htm> 6-27-00.

<sup>68</sup> "14 Hertz Signal Suppresses Rainfall, Induces Violent Winds," 10-25-00, Newshawk Inc.; "When the Army Owns the Weather--Chemtrails and HAARP," Bob Fitrakis, 2-13-02: In this article HAARP inventor Bernard Eastlund is quoted on how HAARP can affect the weather: "Significant experiments could be performed. The HAARP antenna as it is now configured modulates the auroral electrojet to induce ELF waves and thus could have an effect on the zonal winds." Find this article with search engine at [www.rense.com](http://www.rense.com).

HAARP is not only capable of destabilizing agricultural and ecological systems anywhere on the planet, but its effects can target select regions to affect human physical, mental and emotional responses during non-lethal warfare projects<sup>69</sup>. HAARP frequencies beamed at specific targets can generate catastrophic earthquakes<sup>70</sup>, exactly like the quake last December which killed thousands of people in Iran, a nemesis nation according to the Bush administration.<sup>71</sup>

Slowly coming to the core of it, it makes sense to have a second look to the very beginning of things. Project Paperclip was not peaceful at all. The alliance with German scientist led to the development of nuclear weapons, chemical weapons, biological weapons, and methods of mind control. All of them were more or less secretly tested on civilians and army staff. The most devastating development was the conversion of fluoride waste from the aluminum production into a supplement in drinking water and toothpaste in the 60s. This technique of mind control originally was developed by IG-Farben as a method to silence occupied territories, concentration camps and prisoners of war camps by poisoning the habitants with flour-compounds via the drinking water, making them will-less and dull. About the same time the industry started to distribute jet fuel with flour-based additives leading to global dimming and to major damage within nature by acid rains and – following the suggestions of IG Farben – to damage of a unknown extend to the people's minds.

It is interesting to know that IG Farben was financed and “inspired” by the same groups who were pushing the eugenic agenda in the US during the 30s, leading to thousands and thousands of forced sterilizations. IG Farben later created and produced Cyclon B, and there is a direct economic connection between IG Farben, DOW Chemicals and Monsanto, responsible for the production and the spraying of *Agent Orange* in Vietnam.

It is very hard to say how far the influence of groups associated to the eugenic agenda reaches today. Both Rockefeller and Bill Gates with their empire of charities openly avow as acting in this spirit, as well as characters like Henry Kissinger who has been publicly targeted the depopulation of Africa as a main interest of US-foreign policy.

Still, even if these elements can be found in US-politics, it is hard to say when and by whom the properties of barium-strontium-titan at or other aerosols could be intentionally abused to harm people by applying it as a weather or earthquake weapon, or as an agent for mind control.

Apart from the agencies involved, CIA, NSA and the US-Navy, there is a number of private companies that definitely take part: the airplane manufacturer Boeing and Raytheon as the owner of HAARP in Alaska and a major manufacturer of ground and ship based radar

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<sup>69</sup> Angels Don't Play This HAARP, Begich and Manning, op. cit.

<sup>70</sup> Ibid.

<sup>71</sup> Entire passage: Amy Worthington: Aerosol and Electromagnetic Weapons in the Age of Nuclear War. Global Research | June 1, 2004

stations. Additional Raytheon is into weather forecast, flight control and offers on its main website "*Security Solutions*" delivering "*Integrated Geospatial*"<sup>72</sup> *Solutions*" to governments.

Looking at the biochemical processes discovered with mammals exposed to barium-titanate, their integration of the crystals into the sensitive places of the nervous system, where triggered by external field literally every information can be inserted into the body-communication, an intentional abuse of the geo-engineering substances for advanced mind control is in the range of technical possibilities.

As a reaction on the first draft of this paper, a person within the Council of Foreign Relations unofficially confirmed a "number of minor research programs conducted". Also, a high US-Army employee related to the publication as important information on barium-strontium-titanate as an aerosol in use. We appreciate the openness of these people and thank them for the will to take our concerns into consideration.

## 10. Conclusion

The optical and electric properties that make  $(\text{Ba}, \text{Sr}_x) \text{TiO}_3$  so useful in absorbing sunlight would likely remain intact when absorbed by plants. The nano-crystal is not easily dissolvable, its small size  $<100\text{nm}$  enables it to enter into the plant through the leaves or roots as whole nano-crystals.

Advanced Russian research of the 60s has shown that plants trigger cell growth with ultra weak light emissions at  $260\text{nm}$ . This lays within the frequency range where  $(\text{Ba}, \text{Sr}_x) \text{TiO}_3$  is known to absorb close to 90% of all light.

The hypothesis is that  $(\text{Ba}, \text{Sr}_x) \text{TiO}_3$  absorbs the light emitted in plants and by doing so stops cell division.

To verify this theory of  $(\text{Ba}, \text{Sr}_x) \text{TiO}_3$ 's inherent plant growth inhibition qualities, controlled experiments need to be performed.

The huge pressure on politicians and scientist to solve the global warming could easily open the way for desperate acts, like implementing programs before they are fully researched regarding their possible negative consequences. Since the necessary infrastructure and facilities are in place to operate such programs, if not already started, actually the extinction of plants can be already on the way.

Based on tests showing wet deposition (from rain and humidity) and rain samples taken in Germany, an annual release of Barium into the atmosphere for 2012 can be estimated to 865 ton.

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<sup>72</sup> "Geospatial Technology, commonly known as geomatics, refers to technology used for visualization, measurement, and analysis of features or phenomena that occur on the earth."

The miniature size of particles makes them stay in the atmosphere up to 18 months. This means that if material already is sprayed into the atmosphere, it will continue to fall down and increase levels in plants for another 18 months.

Large-scale programs will have large-scale impact. We all need to live of harvest from our land and oceans.

We urge those in charge or those in a position to bring forward this information to the right persons to do so. The necessary experiments need to be done in time.

We have not found published experiments establishing safety of distributing patented nano-particles into our biosphere. Nature functions as a unit, breaking one part of 'chain' will affect the rest, decision makers need to bear this in mind and include research on the effect on plants, microbes, insects, marine-life, birds, animals and humans.

The possible consequences of global warming with heavy storms, floods, drought and ocean acquiring land, imply large challenges and adaptation skills. But which human being can carry the responsibility to launch programs in Godlike scale intending to cover the entire globe with a nano-shield, with a constant drop out toward the earth and oceans, without God-given all encompassing knowledge?

It is theoretically not unlikely that  $(\text{Ba}, \text{Sr}_x) \text{TiO}_3$  actually inhibits or stops plant growth when a certain concentration is reached. Should this happen in large scale, God forbid, global warming would seem like a minor problem.

We urge those in power not to release  $(\text{Ba}, \text{Sr}_x) \text{TiO}_3$  nano-crystal nor other nano-particles with special optical or electromagnetic qualities into the atmosphere before safely for our livelihood is securely confirmed.

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2									
3	PLZ	Ort	Datum	Labor	Barium	Aluminium	Calcium	Magnesium	Bemerkungen
4	75248	Öfbronn-Dürrn	27/ April 2012	Indikator	0.002 mg/l	0.015 mg/l	0.400 mg/l	0.100 mg/l	
5	77723	Gengenbach	18/ April 2012	Synlab OG	0.018 mg/l	0.150 mg/l	1.900 mg/l	0.300 mg/l	
6	79597	Schallbach	24/ April 2012	Indikator	0.000 mg/l	0.005 mg/l	0.450 mg/l	0.020 mg/l	
7	24937	Flensburg	13/ April 2012	Indikator	0.001 mg/l	0.000 mg/l	0.170 mg/l	0.040 mg/l	
8	79199	Kirchtzarten	25/ April 2012	Indikator	0.004 mg/l	0.000 mg/l	0.600 mg/l	0.090 mg/l	
9	78073	Dürrheim	26/ April 2012	Indikator	0.002 mg/l	0.010 mg/l	0.500 mg/l	0.050 mg/l	
10	55130	Mainz	24/ April 2012	Indikator	0.021 mg/l	0.010 mg/l	1.500 mg/l	0.150 mg/l	
11	53639	Königswinter	24/ April 2012	Indikator	0.001 mg/l	0.005 mg/l	0.550 mg/l	0.120 mg/l	
12	87642	Halblech	15/ April 2012	Indikator	0.000 mg/l	0.000 mg/l	0.000 mg/l	0.000 mg/l	
13	99755	Hohenstein	22/ April 2012	Indikator	0.002 mg/l	0.010 mg/l	0.500 mg/l	0.090 mg/l	
14	56244	Helferskirchen	11/ April 2012	Indikator	0.000 mg/l	0.005 mg/l	0.200 mg/l	0.040 mg/l	
15	46569	Hürxow	22/ April 2012	Indikator	0.004 mg/l	0.015 mg/l	1.250 mg/l	0.230 mg/l	
16	83454	Aufham	21/ April 2012	Indikator	0.000 mg/l	0.010 mg/l	0.300 mg/l	0.050 mg/l	
17	44892	Bochum	10/ April 2012	Indikator	0.003 mg/l	0.015 mg/l	0.750 mg/l	0.150 mg/l	
18	83527	Haag	23/ April 2012	Indikator	0.001 mg/l	0.000 mg/l	0.050 mg/l	0.010 mg/l	
19	59494	Soest	23/ April 2012	Indikator	0.004 mg/l	0.010 mg/l	1.700 mg/l	0.190 mg/l	
20	49509	Recke	02/ May 2012	Indikator	0.002 mg/l	0.020 mg/l	0.250 mg/l	0.100 mg/l	
21	03500	Krems	26/ April 2012	WSB Labor	0.006 mg/l	0.031 mg/l			
22	40764	Langenfeld	25/ April 2012	Indikator	0.006 mg/l	0.020 mg/l	0.900 mg/l	0.150 mg/l	
23	55128	Mainz	29/ April 2012	Indikator	0.000 mg/l	0.015 mg/l	0.500 mg/l	0.070 mg/l	
24	69427	Mudau	24/ April 2012	Indikator	0.000 mg/l	0.000 mg/l	0.100 mg/l	0.030 mg/l	
25	12249	Berlin	25/ April 2012	Indikator	0.002 mg/l	0.005 mg/l	0.250 mg/l	0.050 mg/l	
26	04425	Pönitz	05/ May 2012	Indikator	0.001 mg/l	0.100 mg/l	0.300 mg/l	0.040 mg/l	
27	73095	Albershausen	22/ April 2012	Indikator	0.000 mg/l	0.005 mg/l	0.150 mg/l	0.030 mg/l	
28	93161	Sinzig	22/ April 2012	Indikator	0.001 mg/l	0.025 mg/l	0.700 mg/l	0.120 mg/l	
29	65551	Umburg	05/ May 2012	Indikator	0.002 mg/l	0.020 mg/l	1.750 mg/l	0.310 mg/l	
30	39615	Neunkirchen	10/ May 2012	Indikator	0.001 mg/l	0.015 mg/l	0.450 mg/l	0.310 mg/l	
31	82538	Geretsried	12/ May 2012	Indikator	0.000 mg/l	0.000 mg/l	0.200 mg/l	0.030 mg/l	
32	88361	Boms-Glochen	15/ May 2012	Indikator	0.001 mg/l	0.035 mg/l	0.800 mg/l	0.008 mg/l	Checkliste fehlt
33	87452	Altusried	11/ April 2012	Indikator	0.001 mg/l	0.005 mg/l	0.900 mg/l	0.170 mg/l	
34	41363	Jüchen	18/ April 2012	Indikator	0.014 mg/l	0.085 mg/l	2.800 mg/l	0.280 mg/l	
35	16515	Oranienburg	06/ May 2012	Indikator	0.020 mg/l	0.015 mg/l	0.850 mg/l	0.150 mg/l	
36	82152	Planegg	02/ May 2012	Indikator	0.000 mg/l	0.000 mg/l	0.350 mg/l	0.050 mg/l	Checkliste fehlt
37	64625	Bensheim	09/ May 2012	Indikator	0.000 mg/l	0.000 mg/l	0.350 mg/l	0.030 mg/l	Checkliste fehlt
38	49509	Recke	02/ May 2012	Indikator	0.002 mg/l	0.020 mg/l	0.250 mg/l	0.100 mg/l	Checkliste fehlt
39	21354	Bleckede	07/ May 2012	Indikator	0.001 mg/l	0.020 mg/l	0.800 mg/l	0.110 mg/l	
40	82538	Geretsried			Ergebnisse fehlen				
41	97845	Neustadt / Erlach	05/ May 2012	Synlab OG	0.005 mg/l	0.023 mg/l	1.400 mg/l	0.100 mg/l	
42	97845	Neustadt / Erlach	06/ May 2012	Synlab OG	0.006 mg/l	0.018 mg/l	1.700 mg/l	0.000 mg/l	
43	36804	Epenwörden	06/ June 2012	Indikator	0.002 mg/l	0.025 mg/l	0.500 mg/l	0.290 mg/l	
44	25548	Kellinghusen	24/ June 2012	Indikator	0.001 mg/l	0.010 mg/l	0.200 mg/l	0.100 mg/l	
45	91301	Forchheim	16/ July 2012	Indikator	0.007 mg/l	0.075 mg/l	5.000 mg/l	0.340 mg/l	
46	35630	Ehringshausen	17/ April 2012	Indikator	0.000 mg/l	0.005 mg/l	0.200 mg/l	0.040 mg/l	
47	F-67160	Wissembourg	29/ June 2012	Indikator	0.004 mg/l	0.085 mg/l	1.400 mg/l	0.140 mg/l	
48	24145	Kiel	09/ May 2012	Indikator	0.001 mg/l	0.020 mg/l	0.250 mg/l	0.080 mg/l	
49	09430	Drehbach-Scharfenstein	25/ May 2012	Indikator	0.000 mg/l	0.010 mg/l	0.400 mg/l	0.080 mg/l	
50	14822	Borkwalde	05/ June 2012	Indikator	0.000 mg/l	0.000 mg/l	0.000 mg/l	0.010 mg/l	
51	80805	München	13/ June 2012	Indikator	0.002 mg/l	0.005 mg/l	0.250 mg/l	0.040 mg/l	
52	80805	München	04/ July 2012	Indikator	0.001 mg/l	0.015 mg/l	0.950 mg/l	0.100 mg/l	
53	70771	Leinfelden-Echterdingen	15/ July 2012	Indikator	0.000 mg/l	0.000 mg/l	0.000 mg/l	0.000 mg/l	Checkliste fehlt
54	70372	Stuttgart	29/ June 2012	Indikator	0.011 mg/l	0.020 mg/l	1.900 mg/l	0.150 mg/l	
55	58642	Iserlohn	05/ June 2012	Indikator	0.000 mg/l	0.015 mg/l	0.100 mg/l	0.030 mg/l	
56	75015	Bretten	07/ June 2012	Indikator	0.000 mg/l	0.005 mg/l	0.300 mg/l	0.030 mg/l	
57	63303	Dreieich	15/ May 2012	Indikator	0.007 mg/l	0.010 mg/l	5.100 mg/l	0.770 mg/l	
58	65597	Hünfelden	03/ June 2012	Indikator	0.003 mg/l	0.010 mg/l	1.050 mg/l	0.130 mg/l	
59	24939	Flensburg	04/ July 2012	Indikator	0.000 mg/l	0.000 mg/l	0.100 mg/l	0.040 mg/l	
60	73099	Adelberg		Synlab Stuttgart	0.006 mg/l	0.014 mg/l	0.200 mg/l		Checkliste fehlt
61	Durchschnittswerte im Regenwasser				0.003 mg/l	0.020 mg/l	0.868 mg/l	0.123 mg/l	
62	Erdkrustenhufigkeit				0.030	7.570	3.390	1.940	
63	Meerwasserhäufigkeit (relative Löslichkeit)				0.047 mg/l	0.250 mg/l	0.406 mg/l	1.306 mg/l	
64									
65	Eintrag auf gesamte Bundesrepublik				911 t/Jahr	5357 t/Jahr	23249 t/Jahr	32944 t/Jahr	



Dear Ladies and Gentleman

I kindly ask everybody who has access to lab conditions or greenhouses with controlled conditions to conduct the missing experiments and to report the results including pictures to: "[kautzvella@gmail.com](mailto:kautzvella@gmail.com), tel. 0049 179 2661123.

If I should not react on incoming results within a week this text might be used as public domain and completed with your test results naming the lethal doses of barium-strontium-titanate together with the experimental proof. As long as email or phone contact to me is given I would like to evaluate the incoming results myself and will publish (honoring your names if you wish) as soon as there is a visible pattern in the incoming results.

Thank you for your attention and possible contributions.

With best regards

Harald Kautz-Vella