

# The rapid rise of Autism and other Physical Disorders and Diseases and the role of Vaccines, Glyphosate and Electromagnetic Fields

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## Abstract

The number of children diagnosed with ASD (autism spectrum disorder) is increasing rapidly all over the world (Ref. 1). Along with South Korea and Hong Kong, the USA is in the lead in having the largest percentage of autistic children. Since most data on this topic are available from the USA (Refs 2-4), these will be used in this note to illustrate the increase and to describe the main causes suggested in literature: vaccines, glyphosate and electromagnetic fields. In most papers one of these is considered to be the only or most important one responsible for the rapid increase of ASD. I discuss here the possibility that their combination might be most important. In order to extrapolate to the future I made a mathematical fit to the ASD data. The extrapolation suggests that - provided the present trend continues - 1 in 20 children will be autistic in the USA in 2022, 1 in 10 in 2028 and 1 in 5 in 2034. The uncertainty in these numbers will obviously increase with time. The rise of autism is also only one of the problems caused by these environmental factors. Other physical disorders and diseases, also with rapidly increasing numbers, are discussed briefly.

## 1. The increase

Figure 1, with data from the U.S. Centers for Disease Control (CDC) (Ref. 3), illustrates the increase of ASD with time:



Fig. 1

Figure 2 shows this in more detail (Ref. 4):

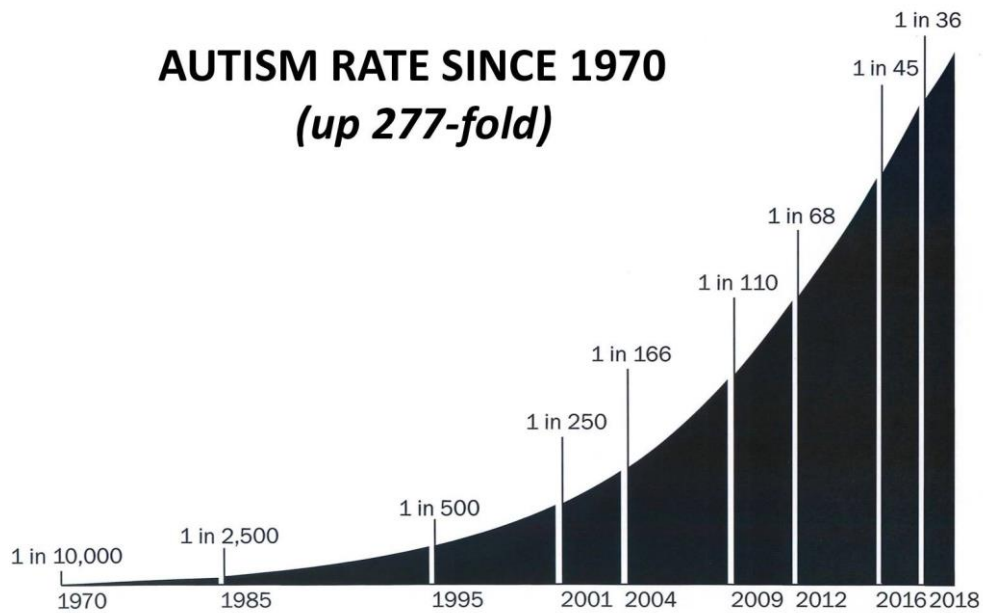


Fig. 2

About this increase one may question:

- what is the cause or what are the causes,
- to what extent will this trend continue in the future,
- are there other physical disorders and diseases with similar rapid increases and
- what can we do about it.

In the following I will try to give some answers.

## 2. The causes

Googling for literature on this topic one comes to a surprising conclusion. Scientists from no less than three different fields claim that the cause for the increase must be found in their field of science. In all three cases there is a very large industry behind. These industries all claim, not surprisingly, that there is no such connection. So let us have a look.

### 2a. Vaccines

In a recent blog (Ref. 5) with the title:

“International scientists have found autism's cause. What will Americans do?”

J.B. Handley gives a survey of scientific papers on this topic, in particular of those published in the last 36 months. In these papers the increase of ASD is blamed on the presence of aluminum (Al) in vaccines and the increase of the amount of Al injected.

From Ref. 5 I quote:

“The amount of aluminum in vaccines given to children skyrocketed beginning in the early 1990s for two reasons: 1) more vaccines were added to the children’s vaccine schedule and 2) the vaccination rate for all vaccines given to children rose (from 50–60% of children vaccinated in the mid-1980s to over 90% today). A child in the mid-1980s would have received 1,250 micrograms of aluminum from their vaccines by their 18-month birthday if they were fully vaccinated. Today, that number is 4,925 micrograms, a near-quadrupling of total aluminum.”

It was also found (Ref. 6) that the Al content in brains of people with ASD was shockingly high. According to the authors: “the aluminum readily and actively traverses the blood-brain barrier to selectively accumulate in brain tissues, where it induces unwelcome changes in brain biochemistry”.

So there has been a significant increase of the amount of Al injected into children, a part penetrates into the brain, induces brain damage and this should explain the increase of the number of children with autism.

For all the biological processes involved I refer to (Refs 5, 6) and the references therein and to a publication (Ref. 7) from 2012 which starts with the question: “How many children must be sacrificed before we get honest answers?”

Apart from autism, the overdose of Al in vaccines is also related to the rise of the number of children and adults with allergies, ADHD and Alzheimer’s disease (Refs 8, 9).

## 2b. Glyphosate

“Half of All Children Will Be Autistic by 2025, Warns Senior Research Scientist at MIT”. This is the title of a paper of a few years ago (Ref. 10) in which this prediction was made by Dr. Stephanie Seneff, a senior scientist at MIT. She blames the ubiquity of glyphosate’s use as the main cause for the rapid increase of the number of people with autism. Reference was made to other studies showing a link between children’s exposure to pesticides and autism, and to the number of adverse reactions from vaccines which might also be correlated with autism. According to Seneff this latter correlation was not so close as with Roundup (i.e. glyphosate).

In the paper no reference was made to a model or anything else on which her claim, that “Half of All Children Will Be Autistic by 2025”, was based. So the warning may be and will be real but the claim must probably be considered to be a wild guess.

From (Ref. 10) I further quote:

“Glyphosate is present in unusually high quantities in the breast milk of American mothers, at anywhere from 760 to 1,600 times the allowable limits in European drinking water. Urine testing shows Americans have ten times the glyphosate accumulation as Europeans.”

Dr. Seneff’s comment on this was:

“In my view, the situation is almost beyond repair. We need to do something drastic.”  
 I come back to this at the end. For new information from Dr. Seneff see Appendix 1.

Glyphosate is not only linked to autism. In 2015 the International Agency for Research on Cancer (IARC), part of the World Health Organisation (WHO), classified glyphosate as ‘probably carcinogenic’ (class 2A), see p. 398 in (Ref. 11). According to this IARC monograph there is strong evidence that exposure to glyphosate is genotoxic, leads to chromosomal damage and to oxidative stress. A positive association has further been observed for non-Hodgkin lymphoma. At the present time glyphosate is the most heavily used herbicide in the world (Ref. 11).

In a study from 2014 a strong correlation was found between genetically modified organisms (GMOS) and two dozen diseases (Refs 12, 13), autism being one of these. From (Ref. 12) I quote: “These data show very strong and highly significant correlations between the increasing use of glyphosate, GE crop growth and the increase in a multitude of diseases. Many of the graphs show sudden increases in the rates of diseases in the mid-1990s that coincide with the commercial production of GE crops.”

Fig. 3 (Ref. 13), illustrates this correlation for ASD:

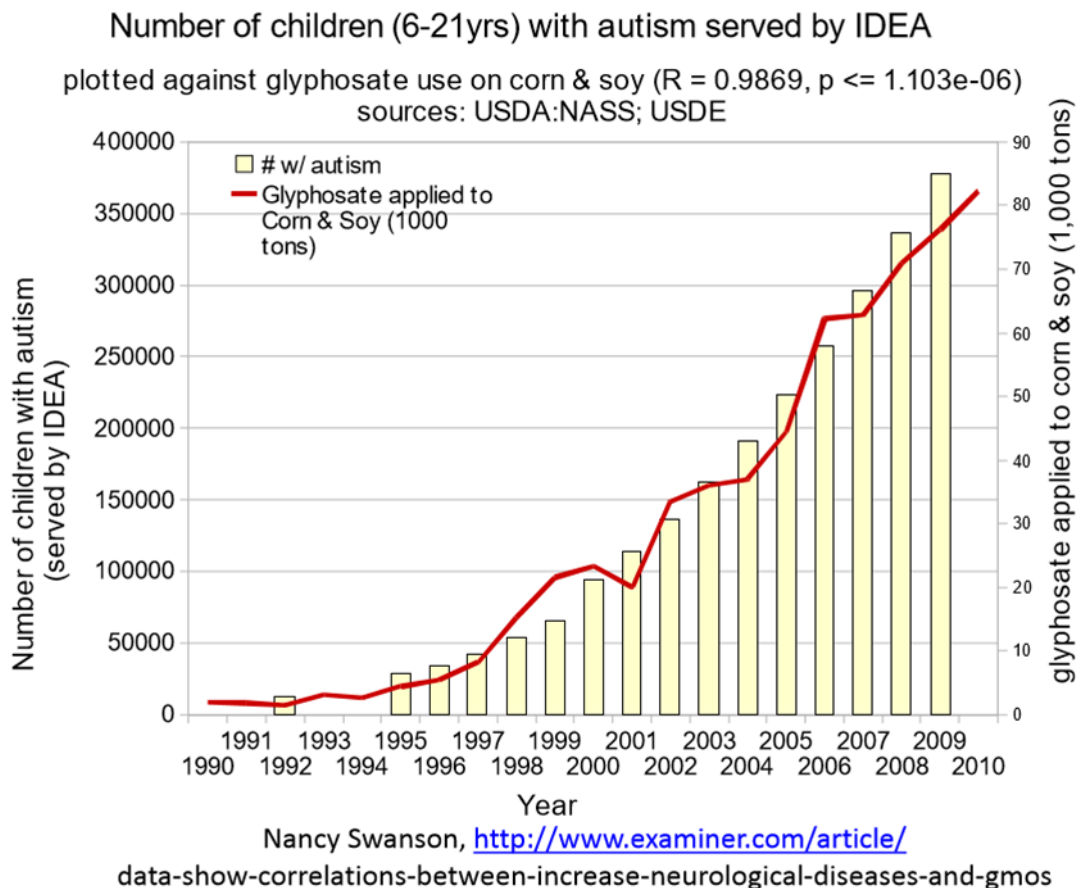


Fig. 3

Another quote from (Ref. 12): “It is commonly believed that Roundup is among the safest pesticides... Despite its reputation, Roundup was by far the most toxic among the herbicides and insecticides tested. This inconsistency between scientific fact and industrial claim may be attributed to huge economic interests, which have been found to falsify health risk assessments and delay health policy decisions.”

## 2c. Electromagnetic fields (EMF)

A review paper (Ref. 14) entitled “Findings in Autism (ASD) Consistent with Electromagnetic Fields (EMF) and Radiofrequency Radiation (RFR)”, by Dr. Magda Herbert from Harvard Medical School and Cindy Sage from Sage Associates, was published as section 20 in the BioInitiative Report 2012. In this review the authors note the parallels between the rise in reported cases of ASD and the increases in EMF exposures over the past decades.

This is illustrated in Fig. 4 (Ref. 15):

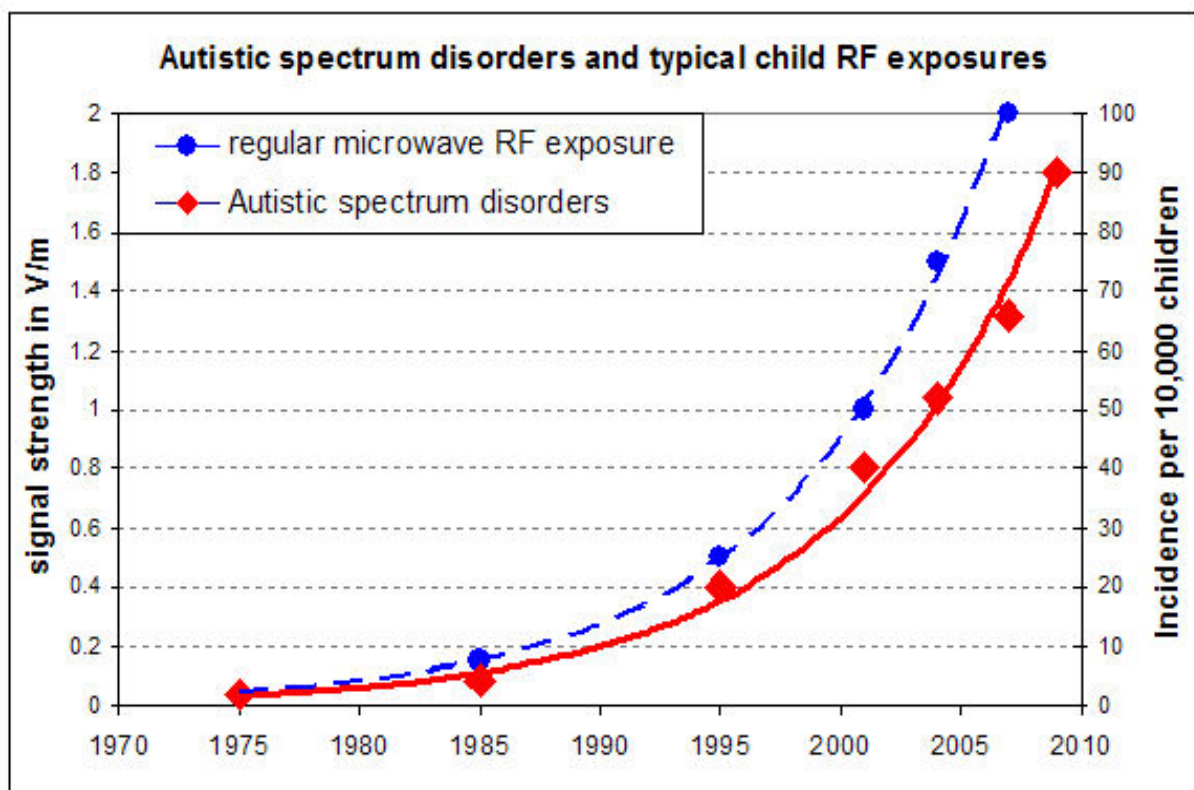


Fig. 4

According to Ref. 14, I quote:

“EMF might also compromise biologically important barrier structures that separate blood flow from organs like the brain. This raises important questions regarding whether other ‘barriers’ that keep blood flow separate from the gut (gut-blood barrier), or the placenta (blood-placenta barrier) or the eye (ocular-blood barrier)

may also be rendered pathologically leaky, and allow albumin, toxins, pro-inflammatory cytokines and infectious agents to cross this barrier into the intestines (invoking immune responses) and impacting the developing fetus. While there are a fair number of negative studies, there are also many studies showing an association between EMF/EMR and pathological leakage of the blood-brain barrier (BBB), as well as evidence in animal studies of damage to brain cells and damage to or death of neurons.”

For the many references in the above quotation I refer to the text in Ref. 14.

Apart from increasing the permeability of these barrier structures, EMF from wireless communication are known to be responsible for the formation of free radicals, heat-shock proteins, altered gene expression, gene mutations, DNA-strand breaks, micronuclei formation and increases of intracellular  $Ca^{2+}$  (Refs 14, 16). Some of these may have an effect on ASD.

On basis of the scientific information on this topic:

- the World Health Organization classified (Ref. 17) the radiofrequency EMF from wireless communication in 2011 as “Possibly carcinogenic to humans” (class 2B)
- the California Department of Public Health states in a publication in 2017 (Ref. 18) that: “Although the science is still evolving, some laboratory experiments and human health studies have suggested the possibility that long-term, high use of cell phones may be linked to certain types of cancer and other health effects, including:
  - brain cancer and tumors of the acoustic nerve (needed for hearing and maintaining balance) and salivary glands
  - lower sperm counts and inactive or less mobile sperm
  - headaches and effects on learning and memory, hearing, behavior, and sleep
- the ‘Cyprus Medical Association’, the ‘Wiener Ärztekammer’ and the ‘Cyprus National Committee on Environment and Children’s Health’ in 2017 jointly published the ‘Nicosia Declaration on Electromagnetic Fields/Radiofrequencies’ (Ref. 19). This declaration starts as follows:

“Potential health Impacts of non-ionizing radiation from EMF/RF (electromagnetic fields/Radiofrequencies) of 30 kHz-300 GHz include carcinogenicity (class 2B IARC 2011), developmental neurotoxicity, effects on DNA, on fertility, hypersensitivity and other serious effects are well documented in peer-reviewed studies. RFR can increase oxidative stress in cells and lead to increase of pro-inflammatory cytokines and lower capacity to repair DNA single and double strand breaks. Cognitive impairments in learning and memory have also been shown. These effects can occur at levels well below existing limits of ICNIRP”.

The Nicosia Declaration continues as follows:

“We reaffirm that fetuses and children have delicate systems that direct the development of human life. Exposure to EMF/RF at an early developmental stage is

of particular concern due to amongst other, to greater absorption and potential effects on the developing brain, nervous system as well as their reproductive system, may induce cancer, cognitive effects etc.”

Figure 5 (Ref. 20) shows the penetration and absorption of RF EMF in the brains of children and adults and illustrates that young children are most vulnerable.

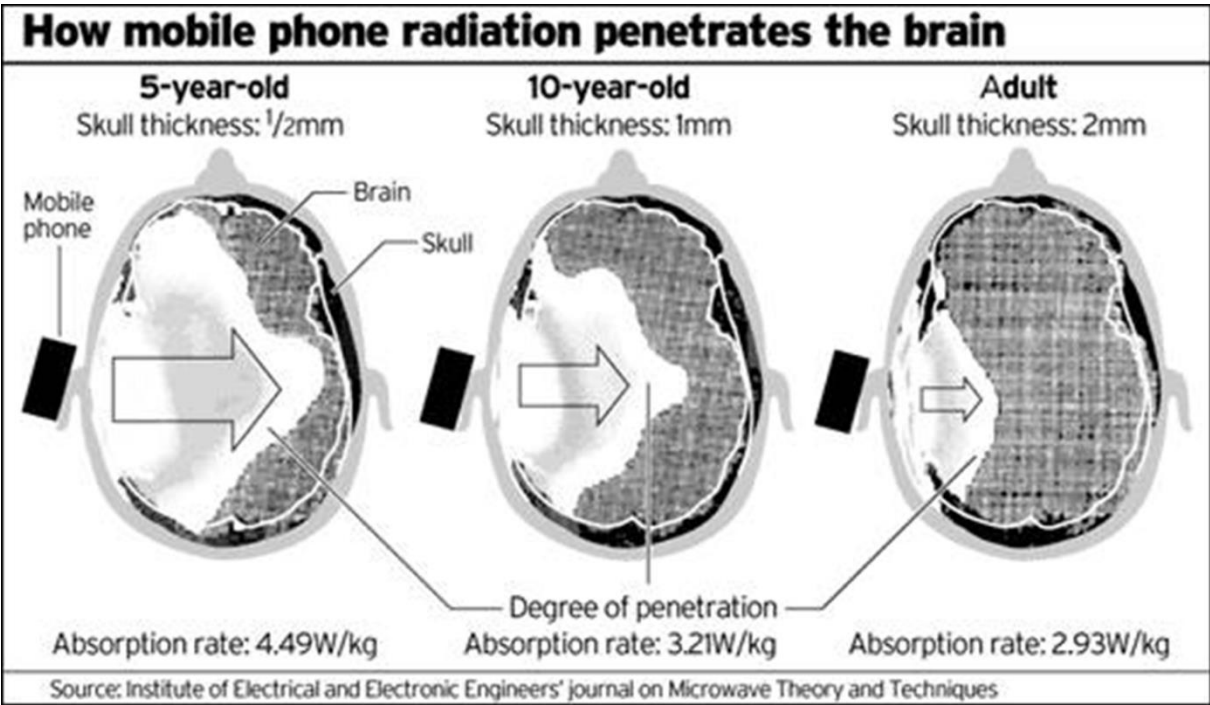


Fig. 5

### 3. Discussion

From the foregoing it might be safe to conclude that there is most probably not one but more and possibly many causes for the rapid increase of the number of children with ASD and other physical disorders and diseases. So it might be interesting to look for cross-links between the publications in the fields reported about. It may seem surprising, but in the vaccine and glyphosate papers no reference is made to the possible role of EMF. This is even more surprising because of the large overlap between the physical disorders and diseases and the overlap between the biological effects such as DNA damage, free radical formation and production of stress hormones. Furthermore, the detrimental effects of AI (vaccines) and glyphosate into the brain and other sensitive parts of our body largely depend on their leakage through the blood-brain barrier and the other barriers mentioned in this note. It is known that the EMF increase the permeability of the blood-brain barrier. Furthermore in the vaccine papers no or hardly any reference is made to the possible role of glyphosate and other pesticides. In the glyphosate papers reference is

made to the role of vaccines although these are regarded to be less important. Finally, in the EMF papers there are many references to the role of toxic substances and their penetration through the blood-brain barrier. To some extent this looks like a competition between the different fields of science, which (or whose) field is most responsible.

To add a personal note, I have been a scientist and manager of science all my life, but not in any of the above fields (mine was physics). The reason for writing this note is that years ago I got more and more complaints over a time span of five years, life threatening at the end. Fortunately I found out in time that removing the cordless DECT telephone was the remedy for all my complaints. That was after examinations in four hospitals which did not give any result. Electrohypersensitivity (EHS) was not part of the examinations. In the EMF field there are also huge economic interests.

After having been active in the EMF-health field for years I now take a broader view and think it highly probably that the combination of the three environmental factors discussed will be much more detrimental than any of the three alone. Saying this, I don't want to diminish the possible negative impact of each of the effects separately. From experiences of EHS persons we know that removing or largely diminishing the EMF exposure leads to a large improvement of their health. And although the large companies behind usually come with the argument that there is no scientific proof that their vaccines, herbicides and EMF are responsible for the health problems, we know from history that the experiences of people are decisive at the end (Ref. 21).

I will end this discussion section with a recent comment on a EMF paper. The comment was the following: "The air is full of radiation from disparate sources, and it is excessively selective to blame very weak cell-phone signals while ignoring everything else bombarding our body, starting with the sun." My answer: "Indeed, on a sunny day the energy deposited on earth by the sun can be over  $1000 \text{ W/m}^2$ , while the Western-European maximum allowable limit for UMTS radiation is only  $10 \text{ W/m}^2$  (will be about the same in the USA). So how can that be a problem? The problem is that the sunlight yields a field strength of  $0 \text{ V/m}$ , while the limit of  $10 \text{ W/m}^2$  for UMTS radiation corresponds to a field strength of  $61 \text{ V/m}$ , infinitely larger. Furthermore that radiation also penetrates into our body and is largely absorbed there. Want to know more? See Ref. 22."

#### **4. Extrapolation**

I now come to the question: "to what extent will this rapid rise of ASD and other physical disorders and diseases continue in the future". The best way to find out is to make a mathematical fit to the available data (Figs 1 and 2). Preferably one likes to



have a formula in which the structure and the coefficients therein have a meaning. This is impossible here. There is not even a consensus about which environmental factors are most important. Figures 2-4 suggest an exponential dependence, so I tried an exponential fit and found as a result:

$$X_c = \exp[0.12(2047 - t)]$$

where t is the year, and Xc means that in the year t one in Xc children has ASD. In Table 1 we see the input values of X, taken from Refs 2-4, implying that according to the available data one in X children has ASD. In view of the spread and uncertainty of the input data X, the agreement with the calculated values Xc is quite good. The values 0.12 and 2047 in the formula are the two parameters which came out of the fitting procedure.

Table 1. 1 in X children identified with autism spectrum disorder (ASD) in the year t according to Refs 2 - 4; the Xc values are calculated with the above formula

t (year)	X	Xc	reference
1970	10,000	10,300	4
1980	10,000	3,100	3
1985	2,500	1,700	4
1995	500	513	4
2000	150	281	2
2001	250	250	4
2002	250	221	3
2002	150	221	2
2004	125	174	2
2004	166	174	4
2008	88	108	2, 3
2009	110	96	4
2010	68	85	2
2012	68	67	2, 4
2013	50	59	3
2016	45	41	4
2016	36	41	3
2017	36	37	4
2022	---	20	--
2025	---	14	--
2028	---	9.8	--
2033	---	5.4	--

The extrapolation to the future suggests that, provided the present trend continues, 1 in 20 children will be autistic in the USA in 2022, 1 in 10 in 2028 and 1 in 5 in 2034. The uncertainty in these numbers will obviously increase with time. According to the formula every child would have ASD in the year 2047. This came out of the fitting procedure and should of course not be taken literally. It is meant as a serious warning, even more so because autism is only one of the problems caused by these three (and possibly more) environmental factors. For many other physical disorders and diseases the situation is equally disturbing as we can see from the many figures in Ref. 13.

## 5. Final comments

On the foregoing many comments may be made. I am aware of course that throughout time awareness, screening and diagnostic criteria for ASD and some other disorders have changed, but this will not explain the rapid increases in the last ten years. Also I did not mention the possible effects of Hg in amalgam fillings and of other toxic elements, but these details don't change the main message: the health of the population in the developed world is deteriorating in many respects and the three environmental factors considered here will certainly have their contribution. If nothing is done about these, Dr. Seneff's comment:

"In my view, the situation is almost beyond repair" may well prove to be correct. So to come to the question in the beginning: what can we do about it? The logic answers will be: to be more critical with vaccines in general and the AI content in it in particular. To avoid a misunderstanding, some vaccinations have in the past found to be very beneficial of course. About glyphosate's use and the use of other pesticides there is already so much opposition that I don't have to add any. Related to this is that It just has been in the press that European Union countries backed a proposal to ban all use outdoors of insecticides known as neonicotinoids that studies have shown can harm bees (Ref. 23). About the EMF, many countries have taken precautionary measures, in particular to protect children (Ref. 24), but contrary to this, the general trend is to further increase the EMF (radiation) exposure and doing so also by using higher frequencies. This will almost certainly be harmful for health.

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About the author: Leendert Vriens studied physics in Utrecht and got his PhD (cum laude) for work done at Utrecht University and at the National Bureau of Standards (renamed to National Institute of Standards and Technology) near Washington. After two years at AMOLF Research in Amsterdam he joined Philips Research in Eindhoven where he worked for 30 years, the last 17 years as a Philips Research Fellow. Since 2013 he is webmaster of [www.stopumts.nl](http://www.stopumts.nl) (exists since 2000).

May 7, 2018

Appendix 1. After sending the preceding pdf around Dr. Seneff directly send me new information. First that she also had come to the conclusion that the three factors discussed here – vaccines, glyphosate and EMF – all play a critical role. Second she had already made a new more accurate extrapolation using a logarithmic plot of the available data. This plot is shown in Fig. 6.

## Percentage of children with Autism in the US

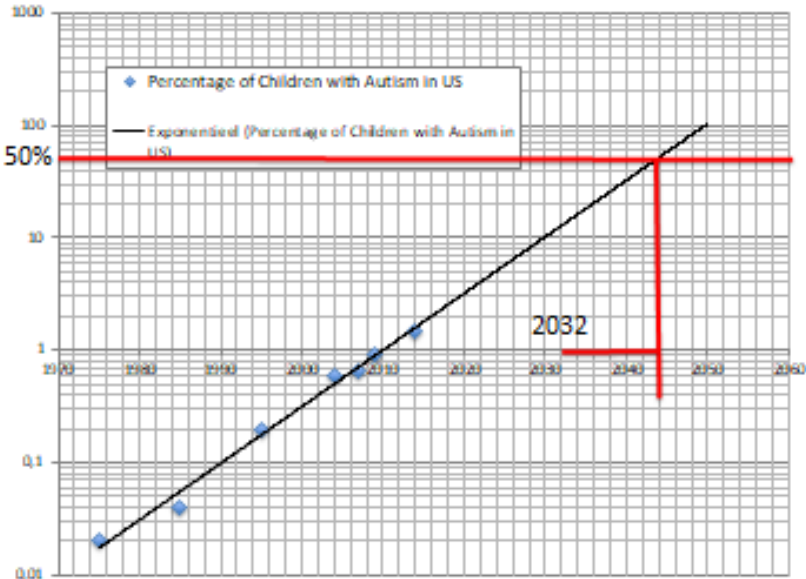


Fig 6. With courtesy of Dr. Seneff

The linear extension of the trend line says that 1 in 2 children born in 2032 will end up on the autism spectrum. The straight line in the logarithmic plot corresponds to an exponential dependence. The straight line passes the 100% line (all children with ASD) in the year 2050 which agrees well with the year 2047 in my formula and as said before this should not be taken literally.

May 8, 2018