

Goal 1: Raise awareness of pollution from tap water.

Means: show by a series of images that tap water is not healthy, supported by demonstrations, video links, authority websites and pdf

Goal 2: Provide the means to filter the water to eliminate the main pollutants.

Means: show each type of filter, its function and use.

Goal 3: To raise awareness that water is not just H₂O and that it has a memory. And how to make this memory a positive one for health purposes.

Means: show how to make water safe by re-informing it.

**Emmanuel Poirier
Presents**

Why Tap Water hurts you? How to make it healthy?



**fluoride
chlorine
cryptosporidium
heavy metals
limescale**

...

**What you need to know about tap water
AND
have never been told.**



MEMOIR PLAN

Preface

INTRO

Where is tap water used?

What is water?

What is drinking water?

DEVELOPMENT

Problems

Who produces tap water?

The cost of water

Public administration Vs private

How is tap water produced?

The quality

What are tap water pollutions?

What pollutions remain after filtering?

Solutions

How to filter it?

How to re-inform it?

How can it be made more dynamic / alive?

CONCLUSION = Synthesis

Bibliography and references

Acknowledgements

Appendices

Preface:

What this book about?

The HEALTH JOURNEY -> the adventure of the author and what his readership can learn from to get a far better health.

For who is this book?

-> if you want to feel secure regarding your health or the one of your baby to come and feel water is a great factor to take into account

-> if you've health problems you've not found the cause, according to F. Batmanghelidj in *Your body's many cries for Water*, most deceases are due to lack of hydration, even aging is caused by water

-> if you want to improve drastically your physical and mental performance: a loss of just 2% body mass due to dehydration impair performance from 20 to 44%

-> if you're healthy and want to keep that way long term: water is top of the list to keep all your body and brains working well

What to expect when applying the solutions given?

I'm not doctor but according to Gerald H Pollack Author of the book *EZ water the 4th phase of water*, our body is composed of 99% water in number of molecules. As such it's obvious that the single water factor has a tremendous effect on your health and your life.

So by getting the healthiest water you'll be a big step closer to get the healthiest life: vibrant energy, clarity of mind, top athletic performances, the best of your mind, clarity, joy and happiness.

Other factors to combine with healthy water to get a healthy life are:

1. sleep
 2. emotional health
 3. balanced and living diet
 4. physical exercise
 5. mental exercise
- As said, I'm not a doctor and you're advised for any health issue to deal with a health practitioner.

Why I wrote this book?

I found out water has a tremendous effect on health and want to share that fact with people interested in bettering theirs.

My experiences with water:

1- My grand mother got half body paralysed due to tainted polio virus water which focused me on getting interested by quality of water

2- Her husband my grand father died and get cremated. I attended to the burninf and seeing that once as ashes we are weighting not that much, led me to ponder the importance in quantity of water.

3- I took 14 Kg of muscles in a 3 months period taking protein powders + creatine and around 3 liters of water / day plus a strenuous exercise regimen 3 times per week for 2 hours, thus I found out water is a major component of muscles and of performance

4- In 2012 I saw for 45 mins the water pouring orange in Ballincollig / Cork which brought my attention to the quality of the Irish water pipe network and led me to buying and using a number of water filters

My water story:

I've been raised both close to the Mediterranean sea and had the river lez running at the bottom of my parents and grand parents garden in Prades le lez 34730 in Herault department in southern France where I used to angle fishing and spending hours walking along, in and to the river source. I thus develop an insight into nature which led me to found out that fishes species are radically different when in Sea, in low altitude freshwater and in mountain freshwater, same for the plants themselves, which meant the environment plays a big role on both.

Who am I?

Emmanuel Poirier, passionate by nature, I spend years around the river lez close to Montpellier in southern France, and at the mediterranean sea, spend hours watering garden with my father gardener.

I've experienced water filtration with various filters (carbon block, KDF, ceramic, Reverse Osmosis), water dynamization (vortex, Marcel Violet cosmic water), water magnetic treatment, water treated with shungite, with tensor rings from Slim Spurling, Geometry structuration with subtle energy of Roberto Zamperini, Efficient Micro-Organisms EM resonance treatment of Dr Higa.

Used magnetic products and water softener to prevent limescale deposit. Worked with a plumber seeing first hand the damages of limescale on heating elements: we were spending 70% of the time to change water boilers due to limescale as the region around Montpellier City is the most hard water place in France.

WHY BEING CONCERNED ABOUT TAP WATER?

Is tap water healthy or not and why?

Short answer: NO IT'S NOT

READ ON TO LEARN WHY, AND WHAT TO DO

What to expect by applying what this book teaches?

Improve your health, beauty, peace of mind, security, physical performance

What are the most efficient and suitable products to make water healthy? (Why BEST is not enough)

Read on to find what is the most suitable system for your case

How to get spring water on tap?

Spring water is not available as it is at the source in bottles. However there are devices to make tap water like at the source spring water, READ ON

Your relationship with water.

Water is not anything, it's a living thing, the material of life itself and the way you feel and talk and behave with water has an impact on your health, feeling and life.

The functions of water in your body are many, among them

*carrying out toxins from your cells

*carrying in nutrients into your cells

Water represent 99% of total body's molecules: we are a walking mass of water. This memoir deals with pollutions of tap water and how to remove them. It deals also with latest discoveries about water memory, structure, informing tap water, to ensure top health for drinking, showering, bathing, cooking.

Why bothering about tap water?

We got legally potable water on tap, isn't it?

Because legally potable is not safe.

And you'll discover along the page that tap water regulations give a lot of info about what's dirtying the tap water and recent and not so recent scientific discoveries show how old and obsolete the legal framework to evaluate tap water quality is.

Where is tap water used?



EVERYWHERE!

So what is water?

Tap water, which seems an insignificant element, so familiar that we no longer think about it, is in fact the key element of life found in all situations and forms of economic or other activities, it is the most omnipresent link between all of us, which means that what impacts water in one place will necessarily by a butterfly effect or by successive implications impact everyone.

In this brief I will tell you a story. It is the story of a person called Humanity. Humanity has made great mistakes and their traces are written in the water. Companies that manage and treat water say that tap water is a very controlled, very safe product, yet what is it really like?

In reality, water has become a product like any other, whereas it is not a product like any other, which means that it is subject to the demand and supply market law and is therefore produced in the most economical way possible. I will conclude with pragmatic and directly applicable solutions to be less impacted by the residual pollution presents in tap water.

Quantitatively, what water represents in litres for household use in France:



An adult consumes 160 litres / day

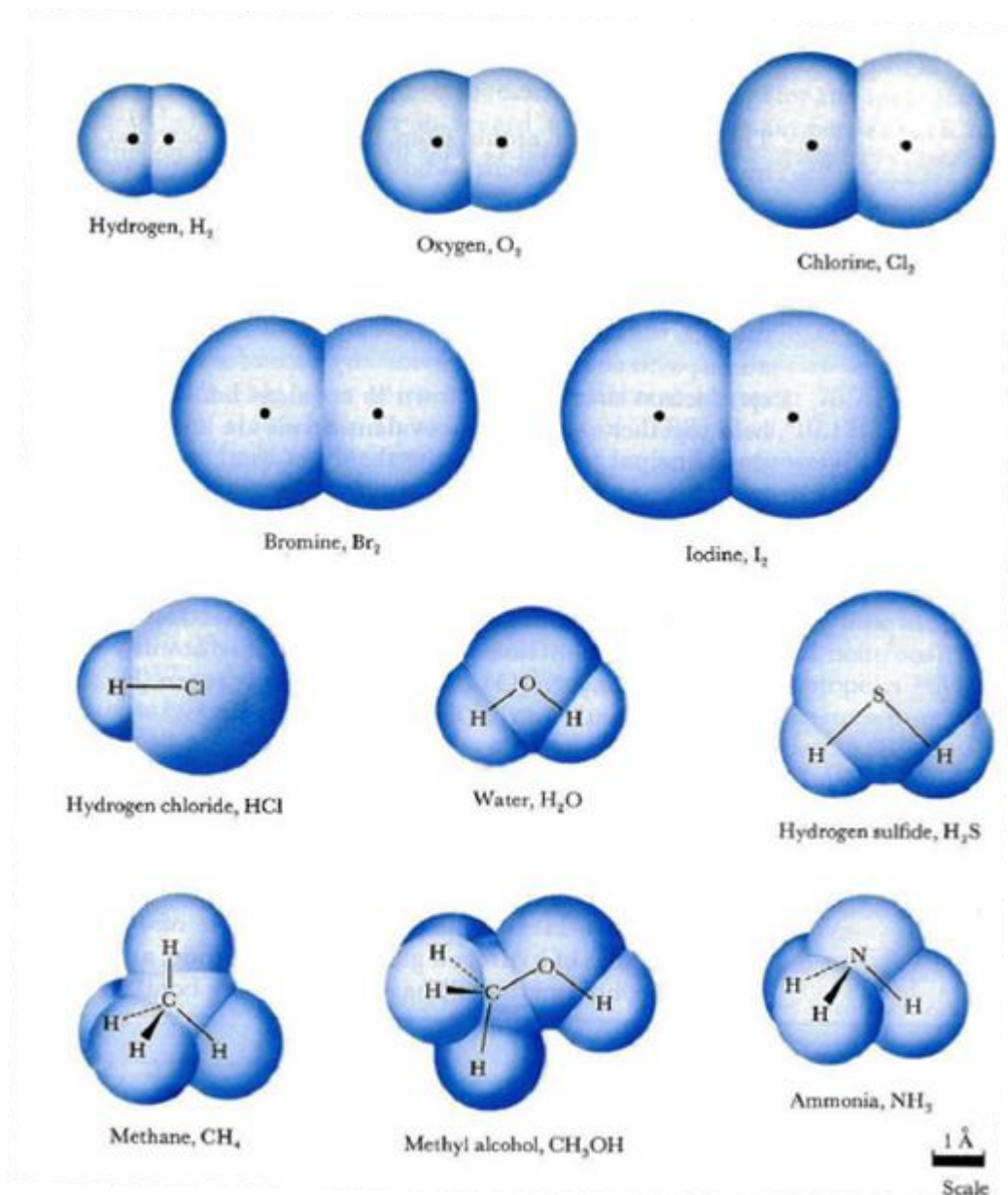
A person consumes / year 60 m³ including 20 m³ of domestic hot water

Four people consume 150 m³ /year, including 50 m³ of domestic hot water.

Only a tiny fraction of this water is intended for food use. The rest is used for hygiene and cleaning.

What is water?





The water molecule (H_2O) is like a very very VERY small battery.

A bit of technicality:

When we speak about water chemically, we talk about VERY VERY SMALL objects

Size of an H_2O Molecule

= 282.0 pm (picometers – trillionths of a meter)

= 11.102-9 inches (0.000000011102 inches)

YOU CAN'T SEE THAT WITH NAKED EYES,

YOU NEED AN ELECTRONIC MICROSCOPE WITH ZOOM * BILLIONS

Clarté = éliminer les problèmes de vocabulaire

We know that positive and negative charges attract each other.

That means that when 2 water molecules are present, they tend to unite by an electrostatic bond between a hydrogen nucleus and the electronic cloud surrounding the oxygen nucleus.

//-> electrostatic => image

This is also true between an H₂O molecule and the many water-soluble substances (colloids, dissolved gases...).

The life span of these chemical contacts is very short (about 10⁻¹² seconds).

Thus, the molecular network within or between water is constantly being built and destroyed.

Consequently, the behaviour of water makes sense only from a dynamic point of view given the permanent reworking of hydrogen and non-static bonds (polymeric aggregates or "clusters": dimeric water, trimer...).

//polymeric => image

In animal and plant bodies, water has a fundamental role as a mediator for all biophysical and biochemical reactions of cells.

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What is Legally drinking water?

Decree 2001-12-20 of 20 December 2001 on water intended for human consumption, excluding natural mineral waters, regulates water.

It must respect several parameters:



1- Microbiological (Regulation (EC) No 596/2009 of 18 June 2009)

Escherichia coli (E. Coli)	0/250 ml
Entérocoques	0/250 ml
Pseudomonas aeruginosa	0/250 ml

→ **E. Coli** contains a varied set of bacteria, only some of which are unhealthy, and the *good ones make up 80% of the human intestinal flora... They prevent other strains of pathogenic bacteria from colonizing the intestinal flora and participate in the production of vitamin k, which helps blood coagulation.*

→ **Enterococci** are indicators of faecal contamination: residues from wastewater present in the sewers, they can enter the water network through a collapse of a sewer pipe on the water pipe or through infiltration since between 20 and 25% of the water is lost in the distribution network through leaks or 1300 billion litres / year. Enterococci are responsible for more than 10% of nosocomial infections (in hospitals).

→ Pseudomonas aeruginosa is one of the most difficult bacteria to treat clinically.

2- chemical



Water can be polluted at the inlet by:

a. *heavy metals* (Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead, Selenium, Zinc) in small quantities permitted but accumulating in the body.

It may thus contain arsenic in the form of sodium arsenite, legally used before 2007 in the treatment of vines as a fungicide or from wood treated houses.

b. *Acrylamide* which is one of the components of Roundup that has the effect of making both men and women sterile.

Most of its substances come from products spread by agriculture and produced by the chemical industries (fertilizers, pesticides, fungicides) as well as from all heavy industries.

It can be seen from a review of these 26 substances that some can be produced by the water network itself, such as benzo[a]pyrene for example or aluminium sulphate: responsible for cancers, various health problems and Alzheimer's.

Annex I for a review of these 26 substances: after analysis, it is clear that most of the health problems present in France stem precisely from such pollution.

We also notice that presented in the form of limits, these pollutions seem to be strictly controlled, my personal opinion is that these 'limits' actually form a

maximum authorised number of substances harmful to the organism that may be legally present. As water is omnipresent throughout society, it is also a means of control through its content and a major political issue.

3- indicators

-> to ADD: (I will limit myself to 2, elements such as pH, Resistivity, rH2 electronic potential will not be treated while being very important for health. For those who want to have more information about them in order to improve their health and that of their loved ones, I advise you to read books on Vincent's bio-electronics)

microgramme = μg = 10^{-6} g = 0.000001 g
milligramme = mg = 10^{-3} g = 0.001 g = 1000 μg

Aluminium 200 μg / l → was at 50 μg / l in 1980 then increased to 200 μg / l in 1998. **Aluminium is a neurotoxic.** It has therefore become an Alzheimer's factor (800,000 cases in France), yet in the Alzheimer plan there is nothing planned to develop prevention... The regulations therefore make it possible to "manufacture" people who will have Alzheimer's. See <http://cdurable.info/L-eau-du-robinet-est-elle-dangereuse-pour-notre-sante-alzheimer,04.html> and the file of the late Henri Pézerat, toxicologist and honorary research director at the CNRS.

Investigations have been carried out in Norway, Ontario, Quebec, Great Britain, Switzerland and southwestern France, and some are still ongoing. Based on such studies, Canadian authors have suggested a possible 23% decrease in the incidence of Alzheimer's disease in Ontario if a significant lowering of aluminum in water were implemented.

Of course, state agencies are burying their heads in the sand, as are the aluminum industries, as usual the money law silencing domestic disputes, but the health problems associated with aluminum are real (there are also some everywhere in non-Organic food).

Chlorides 250 mg/l → Chlorine derivatives have been shown to cause cancer, including breast and bladder cancer, in several studies and miscarriages, among others.

When chlorine is added to our water, it combines with other natural compounds to form trihalomethanes (chlorination by-products) or THMs. These chlorine by-products trigger the production of free radicals in the body, causing cell damage, and are highly carcinogenic.

In swimming pools, chlorine is used to disinfect the water, but once it comes into contact with organic matter released by swimmers (sweat, cosmetics, saliva, urine, dead skin, etc.), a whole series of by-products are formed, some of which are very volatile and can be found in the pool atmosphere. This is particularly the case for chloramines (and more particularly tri-chloramines) which give swimming pools their characteristic smell. These chloramines cause respiratory disorders and are recognized as occupational diseases (Table 66).

In addition, chlorinated water is bad for crops because it kills bacteria, which are a key element of soil life.

Who produces tap water?

Water is a market of €24 billion / year, of which €10 billion goes into the pockets of multinationals cf <http://www.agenceinfolibre.fr/mafia-leau-en-france/>

Historically entrusted to the local authority, water management in France is often handed over to the private sector as part of a "public service delegation". Only a few countries have entrusted everything to the private sector (e.g. Great Britain), France comes just after with 80 to 90% of users served by private companies (these French water distribution companies are among the 4 largest companies in the water sector worldwide).

The 3 sisters → only 26 to 28% of the water market is in public ownership.

Sources:

Les Echos, 25 November 2008, page one, referring to the Bipe/FP2E study of January 2008

http://www.acme-eau.org/France-Le-prix-du-metre-cube-en-eau-trouble_a964.html

Veolia Water (ex Vivendi, ex Générale des Eaux) 39% of the market in 2008, estimated turnover €4.17 billion



<http://www.veolia.fr/qui-sommes-nous/veolia-en-france/eau-france>

With whom does Veolia have strong ties?

With everyone including the ore industries, heavy industries, communities. But also mass media such as Canal+, telephone operators such as SFR, mass music such as Universal Music, etc.

Suez environment turnover of €14 billion, former Lyonnaise des Eaux, Suez Environnement group: 19% of the market

Source: <http://www.suez-environnement.fr/finance/chiffres-cles/annee-2014/>



Degrémont's turnover (Suez Environnement's water subsidiary) €1.6 billion

With whom Degrémont has strong ties?

<http://www.degremont.fr/fr/activites/traitement-de-l-eau-et-partenariats/solutions-locales-sur-mesure/>

SAUR (formerly a Bouygues subsidiary), 11% of the market



1,7 milliard € net revenue
12 000 staff members
10 000 communities under contract
18 millions inhabitants served

Source: <http://www.saur.com/le-groupe/>

So very rich and influential companies that:

- have offered positions to many right and left politicians ("revolving doors")
- the contracts concluded with the municipalities included "donations", which are obviously recovered from the consumer
- huge amounts of money spent on advertising and lobbying
- investments in the media (television, newspapers) which are then very complacent

Water is a fundamental power issue: who controls water controls life.

Source: http://local.attac.org/71/IMG/pdf/Le_water_market.pdf

Public governance VS private governance

Why can water be cheaper under public administration?

-Because in France historically there are only 3 multinationals that control the drinking water market. Competitors when it comes to sharing the loot, however, they do know how to agree to impose abusive tariffs. they have once again been the subject of an investigation by the European Union for unlawful cartel and abuse of dominant position.

-Because the management has no dividends to distribute to shareholders.

-Because there are no costs contributing to the financing of the general

services of the international parent company's headquarters and to the financial operations of buying competitors in other countries, no internal overbilling between subsidiaries organised to avoid corporation tax, no opaque and exaggerated provisions.

Because there is a pooling of know-how, good practices and resources between public services in place of the economic and industrial rivalries that exist between private competitors.

-Because executive salaries are not defined by competition.

-Because the private sector has to pay corporate tax.

-Because there can be speculation by multinationals with the public money entrusted to them (collection of VAT and taxes deducted from invoices and paid back to the state much later).

-Because the user's bill includes the cost of the 25% of the water captured lost due to leaks from under-maintained networks, multinationals consider contracts (15 or 20 years) too short to make profitable the renewal of pipelines planned to last 100 years on average. This does not prevent delegates (the private sector) from invoicing provisions for works that will not or very little be used.

-In a Public Service Delegation (private water management contract), water tariffs can be adjusted throughout the year if a revaluation clause exists in the signed contract.

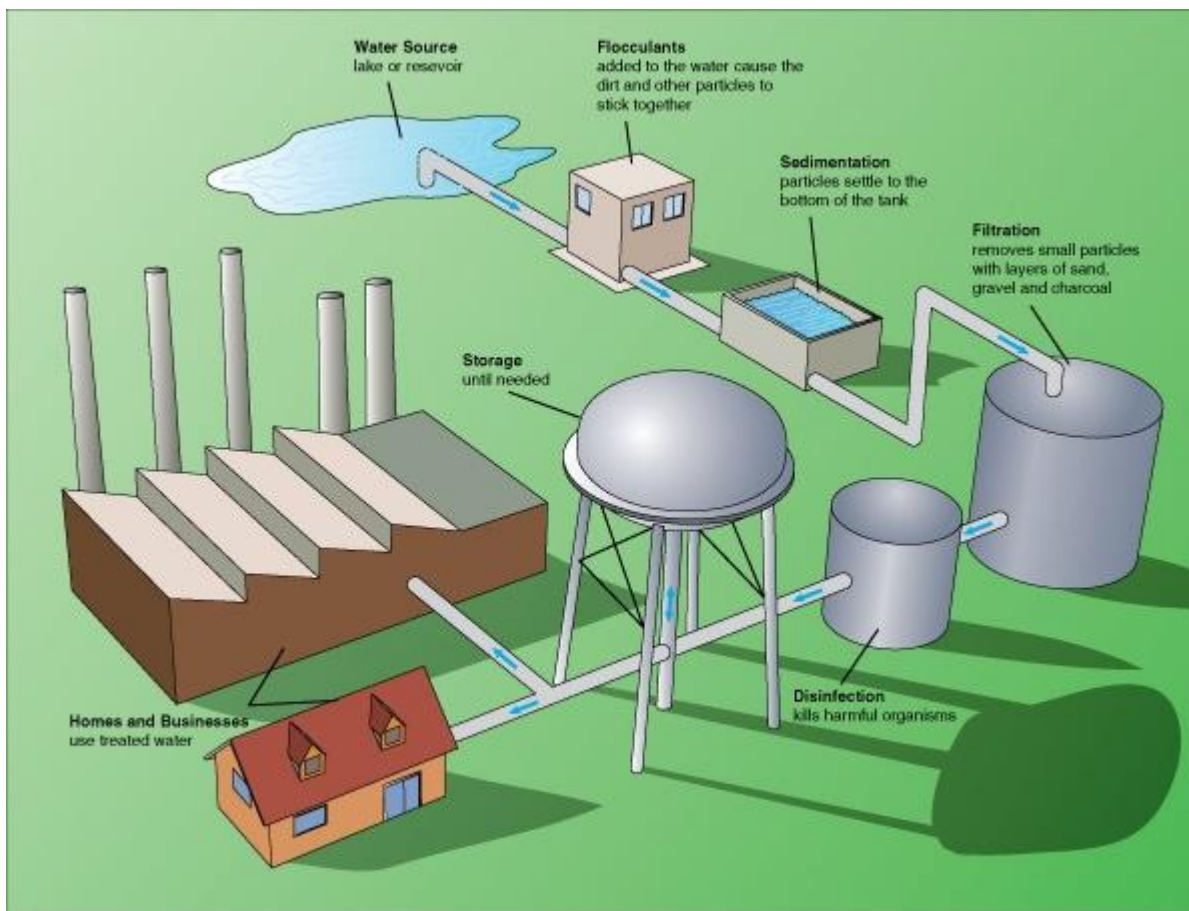
Experience and observation of various invoices or reports show that 15 to 20% of the water price invoiced according to the municipalities corresponds to the benefit of the delegate.

The transition to public management implies the takeover of the personnel of private water treatment companies, so there is no need to train personnel.

Water is not a commodity: it is a public good.

Source: <http://fr.scribd.com/doc/237142528/Les-Avantages-d-une-reprise-de-l-eau-potable-en-regie-publique-en-Regie-Publique>

How is tap water produced? The water treatment process:



Credit:

https://en.wikipedia.org/wiki/Water_treatment#/media/File:Illustration_of_a_typical_drinking_water_treatment_process.png

The water is taken from the rivers and then filtered successively to retain solids: flocculation (form small clumps or masses of dirt / mud) then moved to a sedimentation tank (those big clumbs falls down the tank). Then the water is exposed to activated carbon which will capture a large number of soluble substances by adsorption.

Then the water passes through a disinfection tank where chlorine is added to kill all bacterias and viruses. For this purpose, **chlorine** (1.9 mg / litre of water) is used and silicate will be added to prevent calcium from accumulating, which will block the water pipes.



The water is then tested and injected into the **800.000 km of pipelines of the French water supply network.** For the order of magnitude, the French road network measures 950.000 Km. The water finally arrives in a water tower, then from there through pipes, at the tap, the chlorine level present is 0.6 mg/litre.

The standards are designed so that a person can drink 2 litres of this water / day for 70 years without any risk. → and after 70 years? **26 substances together consists of a completely unknown risk according to the report of the National Academy of Pharmacy.**

THE QUALITY OF TAP WATER

ONCE UPON A TIME: TAP WATER AND ITS POLLUTIONS



What are the pollutions of tap water?

products
elements
chlorinated
discharges
drug
toxic
xylene
aquatic
DBP
aquizine
heavy
radio
sulphates
arsenic
glyphosate
chlorine
nitrates
derivatives
toluene
DDT
benzene
metals
cysts
chlorides
gardia

POLLUTIONS

Chemical pollution

The toxicity of certain chemical pollutants see Annex
+ Residues of drugs that, like the pill, transform men to women (see effect on male fish).

Electromagnetic pollution

On the video Water and Electromagnetism, the point of view of science (<https://www.youtube.com/watch?v=bH9FiHuHieo>) and Marc Henry's scientific blog at the University of Strasbourg: we learn that water is structured in coherence domains or clusters (clusters of H₂O molecules) so 1 Kg of water is much more than 889.1 grams of Oxygen and 110.9 grams of Hydrogen, it is in fact a network of H₂O molecules that interact via electromagnetic links and which is therefore structured differently permanently: molecules are constantly in motion, they constantly make and break their bonds with other molecules.

These links are changing due to pressure, temperature, as well as electromagnetic forces: due to the use of electricity everywhere in modern life, and as any electric current produces an electromagnetic field perpendicular to it, artificial electromagnetic fields, increasingly present with WiFi and mobile phone networks, are spreading in our daily lives and go through us. However, since water is composing between 70 and 99% of our body, these fields have effects on our health.

What pollution remains after filtering?

Many things because the standards don't take into accounts many pollutants (there are many pollutants not taken into account by law makers for defining what is drinkable tap water cf

<https://www.sciencedaily.com/releases/2014/06/140617093224.htm>)

Also the state of the network makes infiltration possible and takes place. And most industries don't take into account the latest research regarding water nor anything outside the system thinking. Thus the water contains drug residues, hormones, pesticides, information about them, ...

Aluminium see http://lexpansion.lexpress.fr/actualite-economique/avis-mitiges-sur-l-eau-du-robinet_1423101.html

Radon cf <https://www.youtube.com/watch?v=D4kP0JjLUiE>

Pesticides <https://www.youtube.com/watch?v=5bwbfiY2ozA>

According to the recent findings of the National Academy of Pharmacy report,

it is not from the tap that we will find the clean water our body needs. According to the Academy itself, tap water is a real pharmacy that provides us with all kinds of medicines every day, from antibiotics to hormones, anti-inflammatory drugs, antidepressants and sleeping pills. The situation is appalling: medicines are everywhere - in groundwater and surface water - and they finally end up in our table glasses because water treatment plants fail to eliminate them! Just as they do not succeed in eliminating pesticide residues or heavy metals that are also found in pipes....

The maximum rates when they exist are never zero. The body to eliminate some is using the liver, kidneys, intestines, lungs, skin (excretories), which are not created to process artificial chemicals. Even if the elimination is done, the excretories suffer the consequences: premature wear and tear. On the other hand, heavy metals are bio-accumulative and therefore stored in the body and according to some studies are the cause of all causes of modern health problems, see the book Truths about emerging diseases in the Appendix and the researches of Dr. Dietrich Klinghardt.

Tap water and its health safety are in question:

France 3, Poison in tap water:

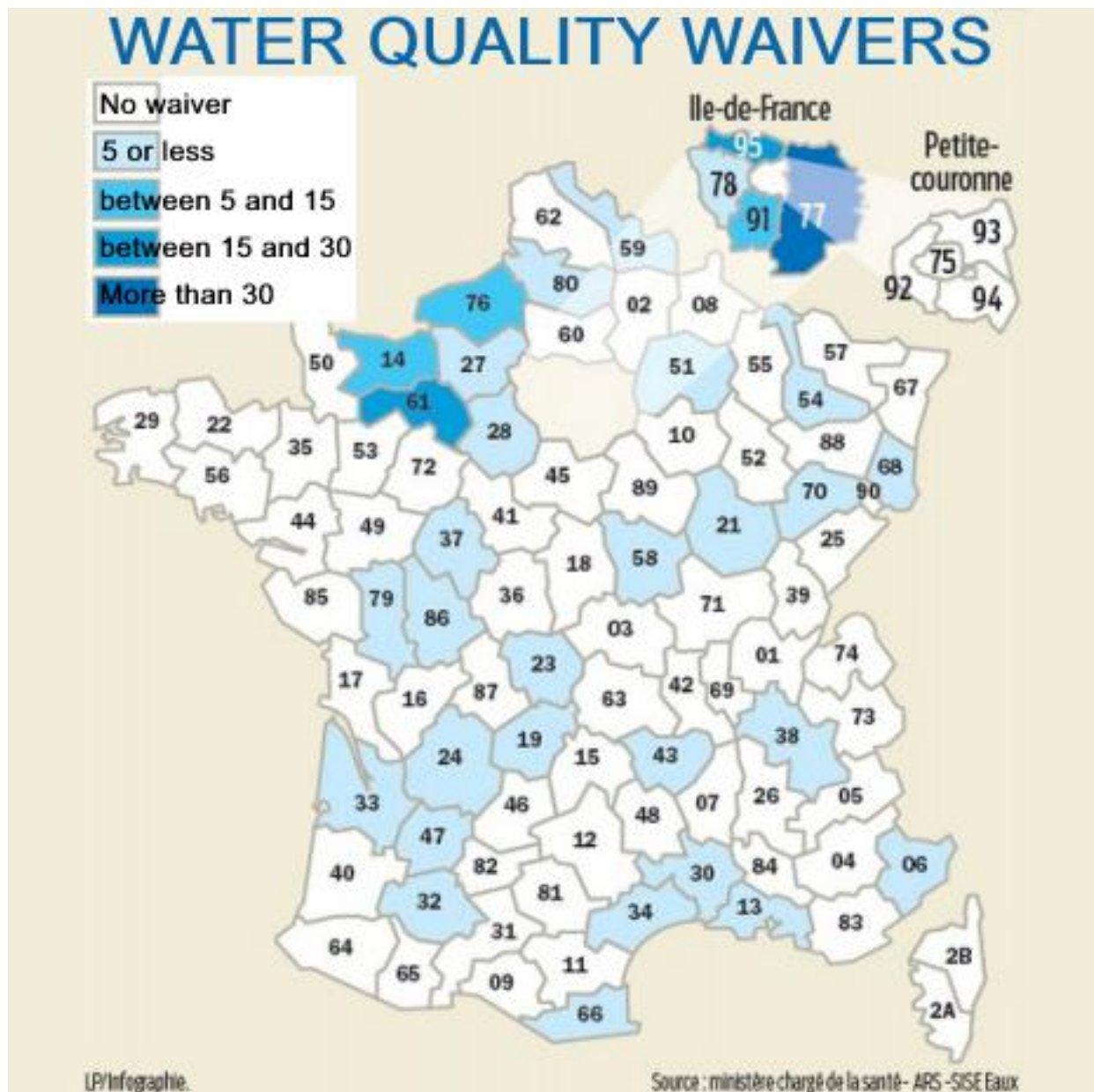
https://www.youtube.com/watch?v=grMbMi_t5n8

Capital Terre (M6), What tap water do we really drink?

<https://www.youtube.com/watch?v=6bALml-mNg8>

Why you must filter tap water at home?

Because when tap water is below the legal quality requirements, the local authority sign an exemption! And it last 3 years and can be renewed 3 times so...



<http://www.leparisien.fr/seine-et-marne-77/champion-de-france-des-eaux-potables-polluees-23-01-2013-2504381.php>

Nitrate levels are increased rather than decreased

http://www.lavie.fr/actualite/ecologie/l-ecologie-ne-fait-toujours-pas-partie-du-logiciel-gouvernemental-25-11-2014-58081_8.php



As we can see, despite all the controls, all the filtering, all the tests, it is impossible to guarantee 100% at all times that the 800,000 km of water pipes in the French distribution network are healthy, without impurities, without infiltrations, without leaks (between 20 and 25% of the water is lost in the network on average, figure 2014).

Moreover, chlorine residues in tap water are bad for health and some substances are not filtered because they are not legally prohibited: drug residues, hormones, radon, certain heavy metals, etc. The already low standards are not always respected and aluminium flocculation causes releases into drinking water which are sources of Alzheimer's according to some international studies.

To improve your health in the short, medium and long term filter tap water because instead of changing the water system to make it better and good for health, the political power and lobbies behind, pass law exemptions to keep the system as it is which allows them to maximize the profitability of their book depreciation, to keep the sick population under the dependence of the pharmaceutical industry, which is itself funded by the health insurance system, which is itself funded by public debt, which is itself possible by borrowing from commercial banks, which themselves borrow the money from the ECB central bank in Frankfurt... If you do not filter the water, you are the filter.

Conclusion:

I- well water: If you want to get rid of the water from the network (e. g. in the countryside): Water from the network can be legally replaced, for example by using a well. Before operating a well, contact the DDASS for information on pollution risks and how to report and control your well. You will find all the information (restrictions, declarations, authorisations) necessary for the use and consumption of water from a well or spring for private purposes at your local town hall.

II- Town water:

1. How to filter tap water?

We can start by filtering all the water from the house when it arrives, however, for an increased elimination of harmful chemicals from the water, we can also use more precise devices according to the specific uses of the water point: for example, use a reverse osmosis unit to filter drinking water and for cooking.

The advantage of filtering at the water mains inlet is to centralize the filtration at one point, which also makes possible to use the filtered water for watering with chlorine-free water by applying a device to prevent limescale from settling on the heating element of washing machines or cumulus, for example, and to eliminate the "bulk" of pollution. All the water in the house is thus filtered.

There are 2 ways to selectively let molecules pass through a wall: either by filtration, the membrane is pierced with a multitude of holes which, depending on their diameters, will only let molecules that will be smaller than the pores pass through.

Either the compound to be passed is soluble in the membrane while the other compounds present in the solution are not, so the passage will be by simple diffusion in the membrane.

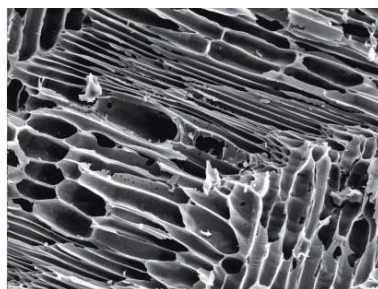
Centralized filtering

2 successive filters: first passage through a sediment filter and then a KDF and activated carbon filters.



The benefits:

1- Sediment filter filtration (the dust, particles, algae, sand grains that can sometimes be found in tap water are blocked in the first sediment filter of 5 μm or micrometer / micron = 0.001 mm).



2- Elimination in the second activated carbon filter (adsorption filter: on its large surface there is a slight positive electrical charge that attracts and retains chlorine ion, organic compounds, pesticides and impurities).

This way toxic substances are maintained on the surface of its large volume of very fine channels: the surface developed by 3 gram of activated carbon covers the surface of a football field.) then KDF (elimination of toxic substances by oxidation reduction via a mixture of copper and zinc→ electron transfers between certain atoms of the toxic products create non-toxic ions to the body) of:

THMS or trihalomethanes: chemical compounds formed when water is disinfected by chlorine)

PCBs or polychlorinated biphenyls / pyralenes are chlorinated aromatic compounds

VOCs or volatile organic components such as aromatic hydrocarbons (the smell of new in all industrial products, for example in a new car, typical in a store selling non-BIO paints and cleaning products such as Castorama) phenols, benzene.

heavy metals (Mercury, Lead, Aluminium, Chromium,...)

some insecticides, herbicides and pesticides (not acrylamide for example)

3- Elimination or strong reduction of chlorine and its bad taste

4- Anti-limestone by its ionic exchange resin: the limestone is transformed into aragonite, a very fine white substance that does not agglomerate

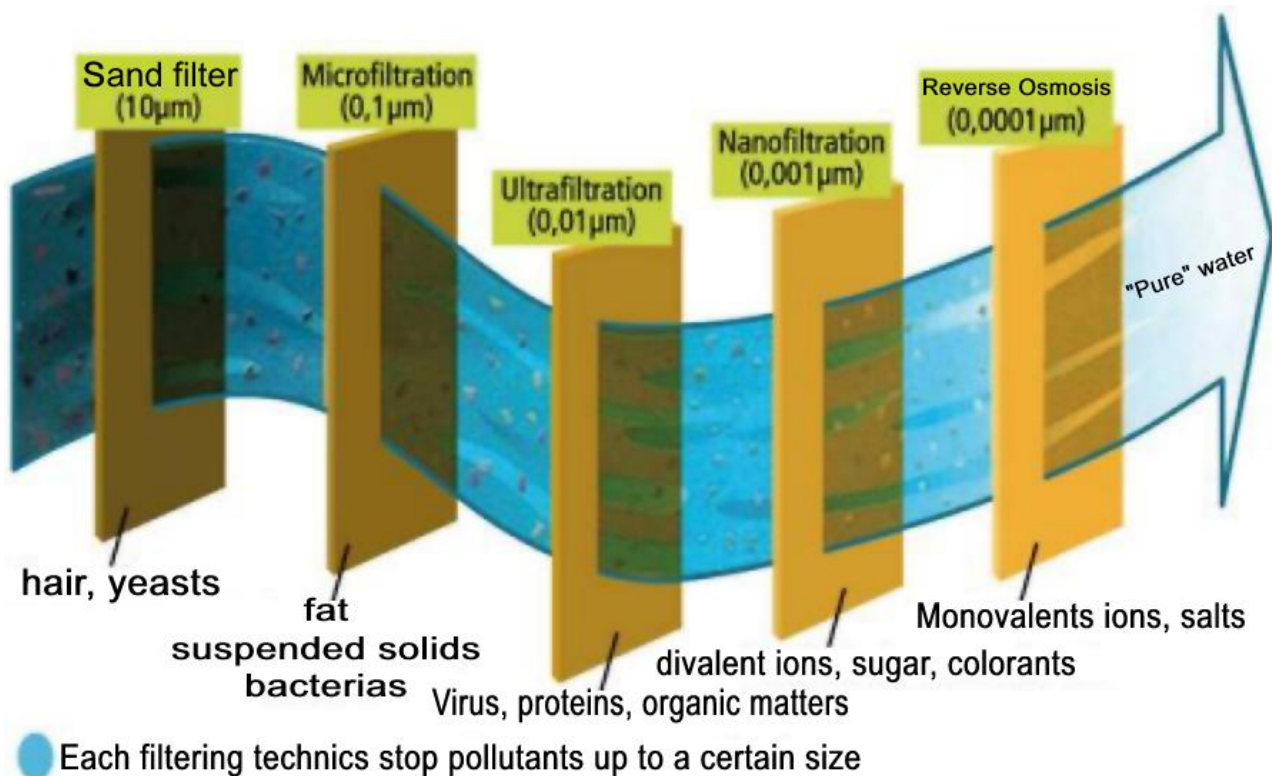
a. water for the shower

a shower lasting four to five minutes consumes 30 to 80 litres and a bath 150 to 200 litres, this is obviously where we are most in contact with water and chlorine vapours.

Shower water can be made more supple, wetter, with a SPA effect on muscles, making hair smooth and soft, with deep skin hydration, while filtering chlorine, limestone, harmful water agents (in part), while saving 30% water and eliminating soap and shampoo through a device like a geothermal shower head:



b. drinking water and for cooking



Criteria to choose a good Reverse Osmosis / RO system:

RO is too fine a filter: it removes everything but water (H₂O).

According to Louis Claude Vincent Bioelectronic, an healthy water has to:

*be slightly mineralized (TDS < 50 mg/l). This way water is slightly acidic and tasty. This can be achieved through adding ionized minerals after RO membrane

*pH has to be between 5.5 and 6.8

* $25 < rH_2 < 28$

* $6000 \Omega < R < 50\,000 \Omega$

Added to Bioelectronic parameters and following Schauberger research:

*Water has to be redynamized and restructured after RO membrane through vortex / magnets to get back the movement water has in nature. Also frequencies water carries in nature (Schumann Resonance) has to be added back and frequencies of medicine residues, heavy metals, toxins, EMF has to be removed.

[Water Molecules - part 1](#)

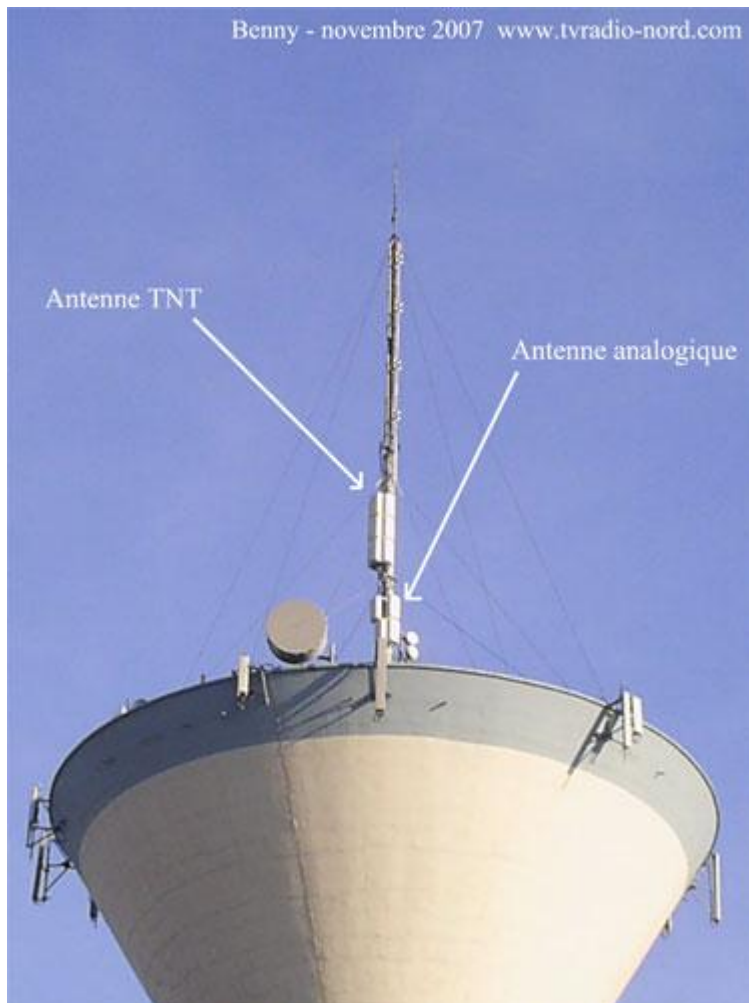
[Water Molecules - part 2](#)

Reverse osmosis was invented by NASA, and is the most efficient filtration system today because the filtration membrane has an extremely fine pore diameter of $0.0001 \mu\text{m}$, this removes everything but H₂O which means we need to remineralize the RO water:



Vortex to give back water its natural information of [The Secrets of Water](#), [The Documentary of Viktor Schauberg](#) [Comprehend and Copy Nature](#)

Why and how to re-inform tap water?



Is filtration enough?

NO! Filtration only removes harmful elements that are material. Water is in addition to a support storing chemicals also a support storing information in the form of H₂O clusters network. *The water molecule H₂O is a superheterodyne, a molecule capable of capturing all wavelengths and frequencies.* Charles The city of Marcel Violet and if we drink cosmic water?

https://www.youtube.com/watch?v=0O4Rd_47gRI

and Marc Henry's video Water and electromagnetism, the point of view of science <https://www.youtube.com/watch?v=bH9FiHuHieo>

Escherichia coli = 70 pds% H₂O, masse = 7×10^{-13} g, L = 1 μ m, R = 0,5 μ m

Matière	P.M. (Da)	Masse (g)	mol	Nombre
Eau	18	70	3,88889	22 240 561 910
Ions	47	1	0,0212766	121 680 875
Acides aminés	110	0,8	0,007273	41 594 287
Lipides	600	2	0,003333	19 061 427
Nucléotides	414	0,8	0,00193237	11 051 224
Protéines	40 000	15	0,000375	2 144 625
ARN	33 500	6	0,0001791	1 024 273
Polysaccharides	1 000 000	3	0,000003	17 157
ADN	2 840 000 000	1	0,0000000035	1
Divers	-	0,4	-	-
Total	3 159 782	100	3,92	22 437 135 779

H₂O: $\frac{22240561910}{22437135779} \times 100 = 99,1\% \text{ mol}$

Sur un plan moléculaire «vivre» c'est savoir gérer de l'eau et des ions...

9:11 / 1:57:52

Eau et électromagnétisme, le point de vue de la science

Être vivant = tube polaire traversé d'eau et d'ions

EAU IONS

10:50 / 1:57:52

On a molecular level, "living" means knowing how to manage water and ions:

a cell is 99.1% water and the second largest percentage is ions.

However, ions are charged particles and they follow fields line, of electromagnetic fields. So if our environment instead of containing the sources of natural electromagnetic fields contains external sources (WiFi, Mobile Networks, Microwaves,...) it modifies the path of our ions which then do not go where they should go.

Why? Why?



Quantum physics: the void contains electromagnetic waves that appear and disappear permanently → 20th century discovery. The vacuum is not empty, because it has an electrical impedance → if it has a resistance, it is because it is not empty, otherwise the resistance would be infinite and it would then pass no current in, therefore no electromagnetic fields.

However, the water molecule H₂O, which forms 99.1% of our body, is subjected to its electromagnetic fields from the vacuum.



Moreover, since water is composed of a mesh of moving + and - loads, it also generates an electromagnetic field in addition to an electric current. Its internal (water mesh) and external (vacuum) electromagnetic fields will couple, to give water.

...

In the end, spurious electromagnetic waves such as WiFi / GSM bring Calcium Ca^{2+} ions to the heart of the cells, causing them to die. They disturb the path where many ions must go and are therefore harmful to health.

**So you have to stop WiFi and GSM:
it's a public health issue.**

For further explanations see the video:

["The truth about mobile phone and wireless radiation" -- Dr Devra Davis](#)
[WiFi Radiation - Dangers of WiFi - See It Measured - How To Remediate WiFi Radiation](#)
[NHS BANS \(!!!\) doctors from saying Wifi is harmful.](#)

How to revitalize and re-inform water?

To energize is to accelerate the electrical exchanges between water molecules.

When water flows under pressure in a linear way, when it is slowed down by passing through a filter or membrane, it has lost its original energy, the one it had when it was running in streams or waterfalls. Molecule network of electrical exchanges are slowed down.

The changes between water molecules are only a few million times per second instead of a few billion times per second as in nature!

By providing electro-magnetic energy to water in the form of infrared waves by EM ceramics or in the form of kinetic energy through vortex motion, the network of water molecules regains coherence and is charged with light: this is called the dynamization of water.

EM Ceramics



In the 1980s, Mr Teruo HIGA, Professor of Agronomy and Horticulture at the University of Okinawa / Japan, created a synergy of 80 microorganisms, useful for soil and plant life, which he called Efficient Micro-organisms (EM).

Among these microorganisms, many anaerobic bacteria, i.e. capable of living without oxygen, produce vitamins, antioxidants and thousands of enzymes.

Prof. HIGA was able to "fossilize" these microorganisms in the rock, because they proved to be very resistant to high temperatures (up to 700°C): cooking natural red clays in the presence of these EM bacteria gave rise to EM ceramics, which emit long infrared rays from the earth and provide complete information with the content of bacteria and EM microorganisms.

Water in contact with EM ceramics is regenerated, i.e. it regains its original energy and the symmetries present in its virgin "fluid crystal" structure: water regenerated by EM ceramics has been used throughout the world for 30 years.

Its most common areas of application are domestic use, animal husbandry, gardening and market gardening, and the re-information of water bodies and swimming pools.

<http://www.cytobiotech.com/>

→ a Montpellier company for products that filter, regenerate and re-mineralize water

Vocabulary:

Soluble: Which can be dissolved in a given solvent. ie. salt, sugar are soluble in water.

Solvent: Liquid with the property of dissolving certain substances. That is, to disintegrate the link between its components, to lose its cohesion, fragmentation, division.

Filter: Retain impurities by filtering.

Filter: A porous body or apparatus through which a fluid is passed to remove suspended matter or to extract solid or pasty matter with which it is mixed.

Pure: Which is without foreign elements.

Proof: being or thing that, by its very existence, bears witness to the reality of something.

Field: (*Physical*) Space where forces are exerted.

Colloids: A mixture of a liquid and a suspension of solid particles so small that they are evenly distributed. The mixture may remain liquid or have the consistency of a paste or gel.

Radon: The intrinsic characteristic of this natural gas, which also makes it of great health importance, is its radioactivity. This gas is formed in the natural decay chain of the radioactive elements in the soil. Radon, which comes from the decay of radium, itself from the uranium chain, disintegrates, releasing other radioactive substances such as polonium, bismuth and lead.

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Defs:

What is water:

http://deltawerken.com/Qu%E2%80%99-doesn't_it%E2%80%0%99-water-1498.html

<http://www.deltawerken.com/La-mol%C3%A9cule-d%E2%80%99-eau>

Problems:

What are the interests of those who produce tap water?

Revenue Veolia

<http://www.veolia.com/fr/groupe/medias/communiqués-de-presse/chiffres-cles-au-31-mars-2014>

<http://www.finance.veolia.com/chiffres-chiffres-cles.html>

With whom does Veolia have strong ties?

<http://www.veolia.com/fr/groupe/medias/actualités/un-developpement-plus-durable-pour-les-acteurs-miniers-et-metallurgiques>

<http://sans-langue-de-bois.eklablog.fr/qui-possede-les-medias-a108205402> -
> article about Vivendi, former Veolia

CA Degrémont

Source: <http://www.verif.com/societe/DEGREMONT-569800873/>

CA SAUR

What is drinking water:

Legal regulations:

http://www.ineris.fr/aida/consultation_document/1017#Annex_I

Microbiological pollution:

E. Coli

<http://sante-medecine.journaldesfemmes.com/faq/7594-escherichia-coli-e-coli-symptomes-et-traitement>

Enterococci

<http://www.microbes-edu.org/etudiant/streptocoques.html>

Pseudomonas-aeruginosa

<http://www.vulgaris-medical.com/encyclopedie-medicale/pseudomonas-aeruginosa>

Chemical pollution:

Acrylamide:

<http://www.i-sis.org.uk/acrylamide.php>

Arsenic:

<http://www.futura-sciences.com/magazines/matiere/infos/dico/d/chimie-arsenic-5956/>

Losses of 20 to 25% or 1300 billion litres of water per year in the network (figures for 2012 and 2014)

<http://www.onema.fr/guide-contre-fuites-dans-les-reseaux-eau-potable>

http://www.lemonde.fr/planete/article/2014/03/20/1300-milliards-de-litres-d-eau-potable-perdus-chaque-annee-en-france-dans-des-fuites_4386044_3244.html

<http://www.leparisien.fr/environnement/gaspillage-au-moins-20-d-eau-potable-perdue-a-cause-leaks-20-11-11-2014-2014-4307165.php>

How tap water is produced:

<https://www.youtube.com/watch?v=ttXgON035SQ>

<http://tpe-leaupotable.e-monsite.com/pages/iii-quelles-sont-les-differentes-techniques-pour-rendre-une-eau-potable/>

http://www.sante.gouv.fr/IMG/pdf/Depliant_Tap_Water_2014.pdf

Water treatment before distribution:

<https://www.youtube.com/watch?v=l-YqoA3zkvY>

Tap water and its health safety are in question:

Capital Terre (M6), What tap water do we really drink?

<https://www.youtube.com/watch?v=6bALml-mNg8>

France 3, Du poison dans l'eau du robinet (Aluminium, Radon, ...):

https://www.youtube.com/watch?v=grMbMi_t5n8

<http://biogassendi.perso.sfr.fr/alualz.htm>

<http://www.ncbi.nlm.nih.gov/pubmed/21157018>

http://www.eauxglacees.com/IMG/pdf/pdf_Pezerat-Picot_plan_Alzheimer_february_2008.pdf

Radon:

<http://www.encyclo-ecolo.com/Radon>

Water and electromagnetism, the point of view of science:

<https://www.youtube.com/watch?v=bH9FiHuHieo>

<http://lanaturedeleau.blogspot.fr/2013/09/eau-et-information-2.html>

http://itab.asso.fr/downloads/colloque-peuv/2_henry.pdf

Water and the cluster structure:

<http://lanaturedeleau.blogspot.fr/2014/10/la-structure-de-leau-et-la-mythologie.html>

Water and chemical pollution:

<http://www.cnrs.fr/cw/dossiers/doseau/decouv/potable/toxicChim.html>

<http://www.installationsclassees.developpement-durable.gouv.fr/Principaux-polluants.html>

<http://www.principes-de-sante.com/traitements/pour-retrouver-une-eau-vraiment-potable>

http://www.lemonde.fr/planete/article/2012/10/27/les-raisons-de-l-addiction-francaise-aux-pesticides_1782000_3244.html

What is in tap water according to the National Academy of Pharmacy:

http://www.acadpharm.org/dos_public/1_Report_Med_Env_version_JMH_def_JPC.pdf

-> Many discussions on doses (count of apothecaries) but no feasible studies have been carried out on the **cocktail effect** and the total absence of the precautionary principle: such a chemical mixture as tap water cannot fail to have an effect and although it is accepted in this report that it cannot be determined, tap water continues not to be filtered correctly at the national level (hormones, pesticides, heavy metals, etc.)... are in contact with each other and flood our bodies).

Water and electromagnetism:

http://www.ateliers-habitatvivant.fr/habitat_sain/electromagnetic_waves_and_us.html

http://www.ateliers-habitatvivant.fr/habitat_sain/fichiers_PDF/lenvironnement_electromagnetique/la_molecule_deau.pdf

Solutions:

http://www.homecents.com/h2o/h2o_pur_meth/

<http://www.scribd.com/doc/16688088/Le-Secret-Des-Patriarches-2>

The KDF

http://www.cieleo.com/blog/index/billet/10280_filtre-kdf-principe-of-functioning-and-benefits

Activated carbon

<http://www.alternativesante.fr/detox/le-charbon-vegetal-active-indispensable-a-la-maison>

<http://www.lenntech.fr/adsorption.htm>

Reverse osmosis and revitalization

<http://www.principes-de-sante.com/traitements/pour-retrouver-une-eau-vraiment-potable>

Optimal water quality

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Michael Monzies for his information on the best osmosis plant on the market: no water loss

Jean Hyves Fromonot for his communication advice

Appendices

Effect of dehydration on physical performance:

https://www.researchgate.net/publication/5924525_Hydration_and_Physical_Performance

<https://www.livestrong.com/article/531789-dehydration-in-sports-performance/>

<https://www.sportsinjuryclinic.net/sport-injuries/sports-injury-prevention/dehydration>

Chemical pollutions:

I- The 26 indicators and chemicals that can legally be in very small quantities in tap water in the order of the most dangerous, therefore with the lowest authorized maximum dose to the least dangerous with the highest authorized maximum dose: low but not at dose 0, moreover in homeopathy we know that the lowest dose is also the most powerful. Some of its chemicals, including heavy metals (EMT), have cumulative effects and all its chemicals can cause cocktail effects.

Why are the numerical limits specified by law inadmissible?

→ the population is very diverse: some people are bigger than others, some are smaller than others, some do more sports than others, some have a diet different from the average, average which is itself a mistake since it tends to make people believe that an average human being exists which is not the case.

In addition, the key elements in the human body that excrete / remove harmful elements from the body or excretories are the liver, kidney, skin, lungs. In addition we store some harmful elements in fat. And we have a different fat content, and different excretories: make the body working more

than it should to get rid of products that have nothing to do in water can only wear it out prematurely and cause dysfunctions.

→ the use of water is very varied: if you take a bath for 1 hour, you will not have the same exposure as if you drank a glass of water, so the doses of chemicals present in the water will not be the same according to our use of water and the averages here again will not apply to a specific case: you.

→ over a lifetime, the even infinitesimal quantity of chemicals, some of which can accumulate, will have negative effects on health, hence the importance of being cleaned up, see Françoise Cambayrac's book.

Where do the products that can be in limited quantities in water come from?
Why are its products filtered?

Heavy metal emissions or now called EMT (trace metal elements) into water: Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead, Selenium, Zinc.

For many years, industries located near watercourses (for process cooling, transport) have discharged their wastes into them. To this phenomenon (increasingly limited by the installation of wastewater treatment plants within industrial sites), we must add erosion and water runoff on soils and roads.

Water is a fundamental element in pollution, since in the case of metals, combined with other elements, will promote many chemical reactions. Water transports heavy metals, and inserts them into food chains (algae, fish, etc.). Even if heavy metals are most often present in trace levels, they are still very dangerous, since their toxicity develops through bio-accumulation in organisms.

1. Benzo(a)pyrene 0.010 µg/l

a. Where did it come from?

Benzopyrenes are produced by incomplete combustion of aromatic compounds.

- in barbecues, where benzopyrene is produced by incomplete combustion of animal fats in contact with charcoal flames. Concentrations can reach 10 µg/kg of meat. A grilled steak can contain the equivalent of 600 cigarettes of benzopyrene.
- in diesel engine exhaust gases in the event of insufficient combustion. The size of the benzopyrene molecules is not large enough to allow them to be trapped by particulate filters.
- a tobacco cigarette produces 18 to 50ng of benzopyrene.

- in the tar vapours
- wood heating, which emits polycyclic aromatic hydrocarbons into the atmosphere in metropolitan France,
- green waste burns are also sources of benzopyrene to be considered; in rural areas, wood combustion leads to high levels of B[a]P in outdoor air
- Disintegration of the internal bituminous or asphalt coatings of water distribution pipes could also contribute to the presence of benzo[a]pyrene in drinking water.

Drinking water would provide only about 0.1 to 0.3 percent of all benzo[a]pyrene ingested; respiration provides only about 0.9 percent, while food is the main source, at 99 percent.

b. Why is it filtered?

The European Union has classified B[a]P toxic for reproduction as duction, category 2 (fertility and development)

<http://www.inrs.fr/dms/inrs/FicheToxicologique/TI-FT-144/ft144.pdf>

<https://fr.wikipedia.org/wiki/Benzopyrène>

http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/benzo_a_a_pyrene/index-eng.php

2. Acrylamide 0.10 µg/l

a. Where did it come from?

In the field of water treatment, polyacrylamide is used worldwide to purify water by flocculating suspended organic matter.



At Monsanto, they must suspect that Roundup is unhealthy or they wouldn't wear a mask.

In agriculture, the agro-pharmaceutical industry and agriculture use its polymer (polyacrylamide) as an additive to commercial herbicides (polyacrylamide constitutes 25 to 30% of the applied solutions of products such as Roundup, Monsanto's flagship herbicide; in this case, it is used as a thickener and surfactant with glyphosate as the active ingredient, to limit evaporation and drift in the air when spraying on fields or grasslands to be weeded).

Acrylamide can be produced in vegetables and the environment by degradation of polyacrylamide, under the action of light or heat.

Also used to refine sugar and small quantities may remain.

<https://www.anses.fr/fr/content/l%E2%80%80%99acrylamide-in-food>

<http://www.ncbi.nlm.nih.gov/pubmed/8950534>

http://www.who.int/water_sanitation_health/dwq/chemicals/acrylamide.pdf

page 9 1.3 Main uses

b. Why is it filtered?

Studies have convincingly shown that acrylamide is a cumulative neurotoxic.

Rats, dogs and cats receiving between 5 and 30 mg per kg body weight per day in their food for 14 to 21 days show weakness and ataxia in the lower limbs, which progress to paralysis with continuous exposure (Leswing & Ribelin, 1969; Thomann et al., 1974). Other characteristic symptoms: testicular atrophy and degeneration of the germinal epithelium of the ovaries. (McCollister et al., 1964)

http://www.who.int/water_sanitation_health/dwq/chemicals/acrylamide.pdf

page 11 4.3 Long-term exposure

<http://colibris.ning.com/profiles/blogs/l-eau-et-l-acrylamide-et-le-cancer-du->

sein-n-est-pas-loin

3. Epichlorohydrin 0.10 µg/l

a. Where did it come from?

Epichlorohydrin or epichlorohydrin or 1-chloro-2,3-epoxypropane, is an organochlorine compound of the semi-developed formula $\text{CH}_2\text{CHOCH}_2\text{Cl}$, a **toxic, colourless, volatile liquid** with a strong garlic odour.

Epichlorohydrin is used in the manufacture of plastic resins, ion exchange resins, polyether polyols for fireproof polyurethane foams, alkylglyceryl ether sulfonates for detergents, elastomers (CO, ECO polymer codes), special resins for the treatment of paper, glycerol and its derivatives.

b. Why is it filtered?

Flammable

- May cause cancer.
- Toxic by inhalation, in contact with skin and if swallowed.
- Causes burns.
- May cause sensitization by skin contact.
- Hazardous decomposition products are formed in the event of fire.

<http://ces.iisc.ernet.in/energy/HC270799/HDL/ENV/envfr/vol349.htm>

4. Pesticides 0.10 µg/l

Pesticides' means:

- organic insecticides,
- organic herbicides,
- organic fungicides,
- organic nematocides,
- organic acaricides,
- organic algicides,
- organic rodenticides,
- organic anti-mould products,
- related products (including growth regulators) and their metabolites, relevant degradation and reaction products. Only pesticides likely to be present in a given distribution should be monitored.

a. Where do they come from?



Pesticide spraying in the fields:

More than 59,300 tonnes of pesticides are used in France each year in agricultural (90%) or horticultural crops (10%). This represents 1.9 kilos of pesticides (fungicides, herbicides and phytosanitary insecticides) every second. Gardening, local authorities consume only 10% of it but with far too high doses. As a result, pesticides are found in 90% of rivers and 60% of groundwater tables. In France, in agriculture, 5 kilos of materials (fertilizers or pesticides) are poured per hectare cultivated.

The French are more contaminated by pesticides than Germans, Americans or Canadians. This is what emerges from a study by the Institut national de veille sanitaire (INVS) carried out as part of a major survey on the nutrition and health of the French population conducted in 2006-2007

Pesticide sales in France continued to grow by 2.6% between 2008 and 2011. Only the most dangerous pesticides have decreased significantly due to the European Union (EU) ban on 53 of them.

Last study on the subject published in 2013 by the INVS:

<http://www.invs.sante.fr/Espace-presse/Communiqués-de-presse/2013/Exposition-de-la-population-française-aux-pesticides-et-PCB-NDL>

b. Why are they filtered?

An American study shows that pesticide residues are present in the blood, urine, fat, certain organs and even breast milk

(Third National Report on Human Exposure to Environmental Chemicals, Department of Health and Human Services, Center of Disease Control and Prevention, Atlanta, USA. July 2005).

<http://www.planetoscope.com/sols/47-consommation-de-pesticides-phytosanitaires-en-france.html>

<http://www.globalhealingcenter.com/natural-health/effects-of-pesticides/>

5. *Polycyclic aromatic hydrocarbons* 0.10 µg/l

a. Where do they come from?

They are generated by the combustion of fossil fuels (particularly diesel engines) in gaseous or particulate form. The most studied is benzo(a)pyrene.

b. Why are they filtered?

Several epidemiological studies in the workplace have shown that Benzene and PAHs are involved in the development of certain forms of cancer in humans.

http://www.actu-environnement.com/ae/dictionnaire_environment/definition/aromatic_hydrocarbure_polycyclic_hap.php4

6. *Total pesticides* 0.50 µg/l

see above for the long list of pesticides

7. *Vinyl chloride* 0.5 µg/l

a. Where did it come from?

used in the manufacture of plastic (PVC), old vinyl discs

During the Second World War, Shellac



(used until then to make audio discs) was produced in extremely limited quantities, which led the 78-rpm manufacturers to produce them in vinyl. They existed in 25 cm for the domestic market and in 30 cm for distribution to American soldiers on mission.

b. Why is it filtered?

classified as **carcinogenic** by IARC (Group 1) for hepatic angiosarcoma and hepatocellular carcinoma, **both forms of liver cancer**.

Exposure to vinyl chloride can be **environmental** (industrial or tobacco smoke emissions) or **occupational** (vinyl chloride manufacture or use). The main route of exposure is the **respiratory route**. Distribution waters are also suspected to be a significant source of exposure.

In France, the use of vinyl chloride as an aerosol propellant and aerosols containing it (medicines, cosmetics) has been prohibited since 1976. Companies have **obligations to purify atmospheric and liquid discharges, as well as obligations relating to waste (special containers, methods of disposal)**.

The occupational exposure limit value for vinyl chloride in workplace air is **1 ppm for 8 hours**.

<http://www.cancer-environnement.fr/218-Chlorure-de-vinyle.ce.aspx>

http://dangereux.fr/chlorure_vinyl_use_toxicity_health_and_environment.html

8. Benzene 1.0 µg/l

a. Where did it come from?

Benzene is a colourless, highly volatile liquid. It is an important synthetic intermediate and an excellent fat solvent, particularly appreciated by professionals for this reason. It is obtained by distillation of coal and oil. It belongs to the family of aromatic solvents. It is a carcinogen.

- The petrochemical industry (refineries have automated installations but can induce manual interventions on reactors, pipes, valves...).
- The chemical industry, as a starting point for many syntheses (synthesis of phenol, styrene, aniline, nitrobenzene, cyclohexane) which are themselves intermediates used for the manufacture of plastics, dyes, textiles...
- The electronics industry, as a degreaser for components for which the highest purity is sought.
- Synthetic chemistry laboratories (research).

- Car garages, where gasoline is still commonly used as a degreaser for parts or even to wash hands (a practice to be avoided).
- Users and repairers of small agricultural equipment with internal combustion engines.
- Perfumery or wood distillation, as an extractor and for the search for aromas (smell of pine, toasted bread, strawberry...).
- Toll stations in car parks, motorways, fuel sales stations.

Two professions are particularly exposed:

Garage operators : They often work in small garages, low ceilings, poorly ventilated. Exposure opportunities occur during engine starting (exhaust emissions), degreasing of gasoline parts, use of the blowgun on engine components, carburettor disassembly, changing the gasoline filter, etc. Exposure is both respiratory and dermal.

Tankers : They are exposed when filling tanks at the depot and when unloading the same tanks at the customer's premises. Exposure is respiratory and dermal (splashes, soiling of clothing...).

NB: Benzene is used in unleaded petrol (as a substitute for unleaded petrol) to increase the octane number, i. e. the anti-knock quality of the fuel. The benzene content of fuels has been a maximum of 1% by volume since 1 January 2000 (Directive 98/70 EC) (diesel fuel for diesel engines does not contain benzene).

As a reminder, benzene is also present in cigarette smoke.

b. Why is it filtered?

http://www.travailler-mieux.gouv.fr/spip.php?page=data_risk&id_article=178

9. Mercury 1.0 µg/l

a. Where did it come from?

Mercury is a naturally occurring element found in air, water and soil.

Mercury is naturally present in the earth's crust. It is released into the environment through volcanic activity, rock erosion and human activities. The latter are the main cause of mercury releases, which include coal-fired power plants, domestic use of mercury for heating and cooking, industrial processes, waste incinerators and mining of mercury, gold and other metals.

Once in the environment, mercury can be transformed by bacteria into methyl mercury, which will accumulate biologically (reach a higher concentration than in the environment) in fish and crustaceans. Methyl mercury also undergoes biomagnification. For example, large predatory fish have a higher probability of having a high methyl mercury content, having eaten many smaller fish that have accumulated mercury through plankton ingestion.

People can be exposed to different forms of mercury depending on the circumstances. However, exposure is mainly a consequence of eating fish or crustaceans contaminated with methyl mercury and inhaling elemental mercury vapours at work during industrial processes. Cooking does not eliminate mercury.

One would think that such a substance should not be present in tap water, this is not the case, and for years mercury has been found in the mouths of millions of French people via dental amalgams. See [dental mercury by Marie Grosman, agrégé de science de la vie et de la terre](https://www.youtube.com/watch?v=fRPfX27W5r8) (<https://www.youtube.com/watch?v=fRPfX27W5r8>): France is the world's leading exporter of elemental mercury, the French consumed 1/3 of dental mercury for the whole of Europe, the no opposition to the removal of amalgams only took place in 2012...

b. Why is mercury filtered?

- Exposure to mercury, even in small amounts, can cause serious health problems and is a threat to child development in utero and at an early age.
- Mercury can have toxic effects on the nervous, digestive and immune systems, and on the lungs, kidneys, skin and eyes.
- Mercury is considered by the WHO as one of the ten chemicals or groups of chemicals of very high concern to public health.
- Worldwide, thousands of tonnes of mercury are released each year into rivers where it is transformed into methyl mercury, a very stable compound that then concentrates in living organisms. The high toxicity of mercury is related to its ability to combine with sulphur. In living organisms, it can block some active sites with sulphur atoms, such as vitamin B12. Mercury compounds are particularly dangerous to the brain where they accumulate.

In France, direct mercury releases to river water are low (0.5 tonnes per

year) and come mainly from plants in the Rhône-Alpes region. Mercury contamination comes mainly from emissions into the atmosphere (15.8 tonnes per year, according to official data) from the use of fossil fuels, waste incineration and the metal industry.

<http://www.who.int/mediacentre/factsheets/fs361/fr/>

http://www.cnrs.fr/cw/dossiers/doseau/decouv/degradation/10_pollution.htm

[http://www.notre-](http://www.notre-planetete.info/actualites/actu_3417_non_mercure_dentaire.php)

[planetete.info/actualites/actu_3417_non_mercure_dentaire.php](http://www.notre-planetete.info/actualites/actu_3417_non_mercure_dentaire.php)

10. 1,2-dichloroethane 3.0 µg/l

a. Where did it come from?

1,2-Dichloroethane is mainly used as an intermediate in the synthesis of vinyl chloride. It is also used in the manufacture of other chlorinated organic compounds (trichloroethane, trichloroethylene, tetrachloroethylene...).

b. Why is it filtered?

H 225 - Highly flammable liquid and vapours.

H 350 - May cause cancer.

H 302 - Harmful if swallowed.

H 319 - Causes severe eye irritation.

H 335 - May irritate the respiratory tract.

H 315 - Causes skin irritation.

R 45 - May cause cancer.

R 11 - Highly flammable.

R 22 - Also harmful if swallowed.

R 36/37/38 - Irritating to eyes, respiratory system and skin.

S 53 - Avoid exposure, obtain special instructions before use.

S 45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label if possible).

<http://www.inrs.fr/dms/inrs/FicheToxicologique/TI-FT-54/ft54.pdf>

11. Antimony 5.0 µg/l

a. Where did it come from?

Industrial applications

It is often a by-product of lead metallurgy.

- A component of lead alloys (increasing its hardness) used in manufacturing:

- of printing characters;
 - of lead-acid battery plates (5%);
 - lead-antimony tin solder alloys (about 80%, 15% and 5%);
 - "Leads" from the hunting cartridges.
- Component of anti-friction alloys based on lead or tin, in particular for melting in moulds (see Materials used for friction).
 - in the form of Sb₂O₃ oxide, it reduces flame propagation in plastics and is used in the composition of PET polyethylene terephthalate plastic as a catalyst in the polymerization reaction
 - Semiconductors: InSb, GaSb used
 - for infrared detection
 - for Hall effect probes (magnetic field detection)
 - Antimony oxides produce an opaque white glass.
 - To give a sparkling effect to fireworks.
 - Opacifier for glasses, ceramics and enamels;
 - Pigment for paint

<http://www.inrs.fr/dms/inrs/FicheToxicologique/TI-FT-198/ft198.pdf>

<http://www.inrs.fr/dms/inrs/FicheToxicologique/TI-FT-202/ft202.pdf>

b. Why is it filtered?

Human exposure to antimony can occur through breathing air, drinking water and eating food containing antimony, but also through contact of the skin with soil, water or another substance containing antimony. Breathing antimony that is bound to hydrogen in the gas phase is the main cause of health effects.

Exposure to relatively high concentrations of antimoins (9 mg/m³ of air) for a long period of time can cause irritation to the eyes, skin and lungs.

Si l'exposition se poursuit, des conséquences plus sérieuses peuvent survenir telles que des maladies des poumons, des problèmes aux cœur, des diarrhées, des vomissements, et des ulcères d'estomac.

It is not known whether antimony can cause cancer or reproductive problems.

- Antimony is used as a drug for parasitic infections, but *people who have taken too much of these drugs or who were sensitive to them have had health problems in the past*. These health problems have made us more aware of the dangers of antimony exposure.

<https://fr.wikipedia.org/wiki/Antimoine>

<http://www.lenntech.fr/francais/data-perio/sb.htm>

12. Cadmium 5.0 µg/l

Where did it come from?

Cadmium can be found mainly in the earth's crust. It is always present in combination with zinc. It is also present in industry as an unavoidable by-product of zinc, lead and copper mining. It is found in pesticides and fertilizers, so it can enter the environment through the soil.

Cadmium is absorbed mainly through food. Foods that are rich in cadmium can significantly increase cadmium levels in the human body. Examples of cadmium-rich foods include liver, mushrooms, mussels, molluscs, crustaceans, cocoa powder and dried seaweed.

We are exposed to a significantly higher level of cadmium when people smoke. Tobacco smoke carries cadmium into the lungs. Blood carries it through the rest of the body where it can increase the effects of cadmium already present due to a cadmium-rich diet.

Other significant exposures may also occur for people living near hazardous waste sites or plants that release cadmium into the air and for people working in the metal refining industry. When breathing cadmium, it can seriously damage the lungs. It can even lead to death.

Why is it filtered?

Cadmium is first transported to the liver by blood. There, it binds to proteins to form complexes that are transported to the kidneys. Cadmium accumulates in the kidneys, where it damages the filtration mechanisms. This leads to the excretion of essential proteins and sugar from the body and other kidney damage. It takes a long time for cadmium that has accumulated in the kidneys to be excreted from the body.

Other problems that cadmium can cause are:

- Diarrhea, stomach pain and severe vomiting
- Bone fracture
- Reproductive failure and even, probably, infertility
- Problems with the central nervous system
- Problems with the immune system
- Psychological disorder
- Probably DNA alteration or cancer development

<http://www.lenntech.fr/data-perio/cd.htm>

13. Arsenic 10 µg/l

a. Where did it come from?

Arsenic is used for arsenic plunging, i. e. plunging an object into a solution of sodium arsenate to remove parasites. Arsenic is thus used for commercial purposes, mainly in alloys and wood preservatives. Lead arsenate is an insecticide. Allied to gallium or indium, it is used in the semiconductor industry for diodes, transistors and optoelectronics. It has also been used recently in the drums of laser printers.



<http://www.futura-sciences.com/magazines/matiere/infos/dico/d/chimie-arsenic-5956/>

b. Why is it filtered?

Arsenic is one of the most toxic compounds that can be found. Despite their toxicity, inorganic arsenic compounds are naturally present in small quantities on earth. Humans can be exposed to arsenic through food, water and air. Exposure can also occur through skin contact with contaminated soil or water.

The level of arsenic in food is rather low, as it is not added due to its toxicity. But arsenic levels in fish and seafood can be high because fish absorb arsenic from the water in which they live. Fortunately, these are mainly the organic forms of arsenic, which are rather less harmful than its inorganic forms, but fish that absorb significant amounts of inorganic arsenic can be dangerous to humans.

Exposure to arsenic may be higher for people working with arsenic, drinking large amounts of wine, living in houses containing treated wood, and those living on agricultural land where arsenic-containing pesticides have been used in the past.

Exposure to inorganic arsenic can cause various effects, such as stomach and intestinal irritation, decreased white and red blood cell production, skin problems, and lung irritation. This suggests that taking large amounts of inorganic arsenic can increase the risk of developing cancer, particularly skin, lung, liver or lymphatic cancer.

Very high exposure to inorganic arsenic can cause infertility and miscarriages in women; it can also lead to lower resistance to infections, heart disorders and brain damage.

Finally, inorganic arsenic can alter DNA.

Organic arsenic cannot cause cancer or DNA damage. However, exposure to high doses can cause certain effects in humans, such as stomach aches or nerve problems.

Arsenic can naturally be found on earth in small quantities. It is present in soil and minerals and can be found in air and water through wind-driven dust and water runoff.

Arsenic is a compound that is extremely hard to transform into water-soluble or volatile products. The fact that arsenic is naturally a rather mobile compound means that it is unlikely that significant concentrations will occur in a specific location. That's a good thing, but the downside is that arsenic pollution is becoming a larger problem because it spreads easily. Arsenic cannot be easily mobilized when it is stationary. Due to human activities, mainly mining and smelting, normally immobile arsenic has been mobilized and can now be found in many more places than before.

The arsenic cycle has expanded as a result of human activity, and now larger amounts of arsenic are being released into the environment and living organisms. Arsenic is mainly emitted by copper-producing industries, but also in lead and zinc production and in agriculture. It can only be destroyed once it has entered the environment, and therefore the quantities released spread and can cause human or animal health problems in many places.

Plants absorb arsenic relatively easily, so there may be high concentrations in food. The concentrations of hazardous inorganic arsenic currently present in surface waters increase the risk of altering the genetic material of fish. This is mainly caused by the accumulation of arsenic in the bodies of freshwater organisms that feed on plants. Birds eat fish that already contain significant amounts of arsenic and die from arsenic poisoning when the fish decompose in their bodies.

<http://www.lenntech.fr/data-perio/as.htm#ixzz3qFyVpdj4>
<http://www.centre-antipoison-animal.com/l-arsenic.html>

14. Bromates 10 µg/l

a. Where did it come from?

Although it is unlikely that bromate will be formed during water chlorination, studies in Great Britain and the United States have shown that sodium hypochlorite solutions of the quality used in water treatment may contain bromate as a contaminant. Data collected in the United States indicated concentrations of bromate in drinking water ranging from <2 to 51 mg/L. In

the United Kingdom, concentrations ranged from 50 to 1150 mg/L. Other researchers have found concentrations of bromate well above 10 µg/L in sodium hypochlorite solutions.

Since the activity of chlorination in these solutions decreases over time, it may be necessary to use larger amounts of sodium hypochlorite solution to achieve the required level of disinfection. As a result, bromate levels could be elevated due to the long-term storage stability of bromate (as is the case in very small municipalities).

Bromate does not enter into the natural composition of water, but it can be formed when drinking water is disinfected by ozone or by a combination of ozone and hydrogen peroxide. The concentration of bromide in the raw water is an essential factor in the formation of bromate. Bromine in well water is essentially inorganic.

The main natural sources of bromide in groundwater are the intrusion of salt water and the dissolution of bromide that may be found in sedimentary rocks. Municipal and industrial wastewater effluents, as well as water from roads and farmland, can also contribute to high levels of bromide in surface waters.

<http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/bromate/index-fra.php>

b. Why is it filtered?

Bromine is a naturally occurring element that can be found in many inorganic substances. However, many years ago man began to introduce brominated organic compounds into the environment. All these organic compounds are not natural and can be seriously harmful to humans and the environment.

Humans can absorb brominated organic compounds through the skin, with food or when breathing. These compounds are widely used in sprays to kill insects. But they are not only a poisons for the animals against which they are used, but also for larger animals. In many cases they are also a poison to humans.

The most important effect that can be caused by organic contaminants containing bromine is a dysfunction of the nervous system and a disruption of genetic material.

But brominated organic compounds can also cause damage to organs such as the liver, kidneys, lungs, and they can cause stomach and gastrointestinal system dysfunction. Some forms of brominated organic compounds, such as ethylene bromide, can even cause cancer.

Inorganic brominated compounds are found in nature, but even if they are

naturally present in nature, humans have increased their proportions too much over the years. Through food and water, humans absorb high doses of inorganic brominated compounds. These compounds can damage the nervous system and the thyroid gland.

15. Lead 10 µg/l

a. Where did it come from?

Toxic to living organisms (plants, etc.), disrupts photosynthesis and other metabolic mechanisms. Humans absorb lead most often through their food (drinking water in particular).

The exploitation of deposits, erosion, water withdrawals or volcanic eruptions will release traces of lead into the environment. It can then become toxic if it is found in sufficient quantities in living organisms.

In addition to these natural phenomena, human activity, even if it does not create heavy metals, contributes to their diffusion in the environment:

- Physical lead releases: the metallurgical and mining industry is the main source of human emissions, with lead being present in operational waste. Another example is the presence of lead in automotive batteries (75,000 tonnes of lead per year).
- Atmospheric emissions: These emissions concern almost all metals: mercury, cadmium, arsenic, chromium, lead. These decreased by 50% between 1990 and 1998.

b. Why is it filtered?

Toxic effects on the central and peripheral nervous system. Children exposed to low doses of lead for long periods of time may develop lead poisoning (a disease characterized by various disorders: growth, central nervous system development, intellectual development and behaviour). In adults, at high doses, it can induce reproductive disorders, renal failure, and encephalopathies.

The European directive proposes a temporary limit after 5 years at 25 µg/l. Stricter regulations would require the renewal of all drinking water supply systems.

16. Selenium 10 µg/l

a. Where did it come from?

Humans can be exposed to selenium in different ways: through food, water or

contact with soil or water containing high concentrations. Selenium is naturally widespread in the environment.

Exposure to selenium is mainly through food because selenium is naturally present in seeds, cereals and meat. Man needs to absorb a certain amount of selenium daily to maintain good health. Food generally contains sufficient amounts to prevent diseases caused by selenium deficiency.

Selenium absorption by food may be higher than usual because, in the past, many selenium-rich fertilizers have been used on agricultural land.

b. Why is it filtered?

People living near hazardous waste sites may face higher exposure. Selenium from this type of place and agricultural land ends up in groundwater or surface water during irrigation. As a result, selenium can sometimes be found in local drinking water and therefore selenium exposure through water is temporarily higher.

People working in the metal and paint industry... also face greater exposure, mainly by breathing. Selenium is mainly released into the air during the combustion of coal and oil.

People who eat a lot of seeds growing near industrial sites may be exposed to higher exposures to selenium. Exposure to selenium from water can increase when selenium from hazardous waste crushers ends up in water wells.

Exposure to selenium through air usually only occurs in the workplace. It can cause dizziness, fatigue and irritation of the mucous membranes. When exposure is very high, problems with the lungs and bronchi can occur.

<http://www.lenntech.fr/data-perio/se.htm#ixzz3qk5TdRaZ>

17. Tetrachloroethylene and trichloroethylene 10 µg/l

a. Where did it come from?

Dry cleaning of clothes
Degreasing and cleaning of metal parts
Textile finishing
Extraction of oils and fats
Synthesis intermediary

Tetrachloroethylene dissolves a large number of substances such as fats, oils, resins... → is a typical industrial product including mechanics and textile manufacturing.

b. Why is it filtered?

H 351 - Suspected of causing cancer.

H 411 - Toxic to aquatic organisms, causes long-term adverse effects.

R 40 - Suspected carcinogenic effect - insufficient evidence.

R 51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S 23 - Do not breathe gases/fumes, vapours, aerosols (appropriate wording to be specified by the manufacturer).

S 36/37 - Wear suitable protective clothing and gloves.

<http://www.inrs.fr/dms/inrs/FicheToxicologique/TI-FT-29/ft29.pdf>

18. Nickel 20 µg/l

a. Where did it come from?

Nickel is a compound that is present in the environment at very low concentrations. Man uses nickel for different applications, the most common is the use of nickel as a component of steel or other metal products. It can be found in metal-based products such as jewellery.

Food naturally contains small amounts of nickel. Chocolate and fats are known to contain significant amounts of them.

Our consumption of nickel increases when we eat large quantities of vegetables from contaminated soils. Indeed, we know that plants assimilate nickel.

Smokers have lungs with more nickel passing through than non-smokers.

Finally, nickel can be found in detergents.

Humans can be exposed to nickel through breathing, drinking water, eating food or smoking cigarettes. Skin contact with nickel-contaminated soil or

water may be a form of nickel exposure. In small quantities, nickel is essential, but when the absorption is too high it can pose a health risk.

Nickel is air released from power plants and waste incinerators. Then it settles on the ground or falls back after reaction with rainwater. It usually takes some time to remove nickel from the air. Nickel can also end up in surface water when it is present in wastewater.

The largest proportion of nickel released into the environment is adsorbed by sediments and soil particles and therefore becomes stationary. However, in acidic soils, nickel becomes more mobile and can reach groundwater.

<http://www.lenntech.fr/francais/data-perio/ni.htm#ixzz3qk90WjZ6>

b. Why is it filtered?

More risk of developing lung, laryngeal and prostate cancer

- Nausea, vomiting and dizziness after gas exposure
- Lung embolism
- Respiratory failure
- Birth failure
- Asthma and chronic bronchitis
- Allergic reactions such as skin rashes (mainly with jewellery)
- Heart problems

<http://www.lenntech.fr/francais/data-perio/ni.htm#ixzz3qk8Anrnd>

19. Chromium 50 µg/l

a. Where did it come from?

There are several types of chromium that do not all have the same effects on organisms. Chromium enters the air, water and soil in the forms of chromium III and chromium VI during natural processes and as a result of human activity.

The main human activities that increase chromium(III) concentrations are the manufacture of steel, leather and textiles.

The main human activities that increase chromium(VI) concentrations are chemical, leather and textile factories, electro-painting and other applications of chromium(VI) in industry. These applications mainly increase the chromium concentrations in the water.

When coal is burned, chromium can also be found in the air and when water is discharged, chromium can be found in the soil.

Most of the chromium in the air eventually settles and ends up in water or soil.

In soil, chromium binds strongly to soil particles and therefore does not move to groundwater. In water, chromium is absorbed on the sediments and becomes immobile, only a small part of the chromium that is found in the water eventually dissolves.

b. Why is it filtered?

Chromium (III) is an essential element for organisms that can interrupt sugar metabolism and cause heart problems when the daily dose is too low. Chromium (VI) is mainly toxic to organisms. It can alter genetic material and cause cancer.

The crops have a system to control chromium consumption. But when the amount of chromium in the soil increases, it can lead to higher concentrations in crops. Soil acidification also influences chromium consumption by crops. In general, plants only absorb chromium (III). This may be the essential type of chromium, but when concentrations exceed a certain value, negative consequences can always occur.

Chromium is not known to accumulate in the bodies of fish, but high concentrations of chromium, due to the release of metal products into surface waters, can damage the gills of fish swimming in waters near the discharge point.

In animals, chromium can cause respiratory problems, a lower ability to fight disease, birth defects, infertility or tumour formation.

<http://www.lenntech.fr/data-perio/cr.htm>

20. Cyanides 50 µg/l

a. Where do they come from?

Cyanides, minerals and organics are inseparable from life (as intermediaries of metabolism) and industry. The most common are hydrogen cyanide (HCN), water-soluble salts (e. g. NaCN and KCN) and complexes called cyanometallates such as ferrocyanides.

- hydrocyanic acid, which can be used as a pesticide, is a nitrile synthesis intermediate (which will result in the manufacture of acrylonitrile polymers, solvents such as acetonitrile, or molecules for pharmaceutical use) and is found as a by-product in the coal and steel industries;
- halogenated products such as bromide or cyanogen chloride are used as synthetic products and pesticides;
- Prussian blue, a widely used dye, is a final residue of physico-chemical stabilisation of cyanide compounds;

- salts (NaCN and KCN) are widely used in the mining industry, particularly in gold and silver mines (cyanidation process), to extract these precious metals from excavated rocks

b. Why are they filtered?

Cyanide ion (CN^-) is a compound highly soluble in water (water solubility of 37% at 20°C). Volatilization from water can be considered very slow. Similarly, the potential for accumulation in sediments is low. However, due to the ionic nature of the compound, interactions with clays and humic acids are possible and therefore the passage of the substance to the sediments cannot be excluded.

CN-removal in the aqueous phase by biodegradation is possible, but probably slow. An adaptation of the microorganisms seems necessary for this elimination route to be significant.

Cyanide ion, when found in a gaseous state as hydrogen cyanide (formula HCN) or as a salt of an aqueous solution of hydrocyanic acid, is an extremely toxic poison. The salt of this hydrocyanic acid, potassium or sodium cyanide (KCN formula), is what is commonly referred to as cyanide.

Cyanide ions can bind to Iron present in certain enzymes, such as mitochondrial cytochromes C oxidases. This then causes a blockage of cellular respiration.

Cobalt salt is a cyanide antidote: it acts as a chelating agent, binding to the cyanide ion to form a compound eliminated by the kidneys. The best-selling cobalt-based antidote in Europe is Kelocyanor.

Cyanide is present in some fruits, such as almonds, peach stones, plums, cherries and apricots. In ancient times, peach and almond stones were crushed to obtain cyanide. This poison can be detected by its characteristic bitter almond smell.

<http://www.futura-sciences.com/magazines/sante/infos/dossiers/d/biologie-poisons-histoire-1676/page/12/>

<http://www.lenntech.fr/francais/cyanure-environnement.htm#ixzz3qoZfjjX0>

21. Total trihalomethanes (THMs) 100 µg/l

a. Where do they come from?

Trihalomethanes are a class of organic compounds based on the methane molecule (CH₄) where the hydrogen atoms usually present are replaced by three halogen atoms (chlorine, bromine, fluorine and/or iodine). Chloroform and dibromochloromethane are two examples of trihalomethanes.

Trihalomethanes are an important and predominant group of chlorinated drinking water disinfection by-products. They can result from the reaction between the natural organic matter present in the water and the chlorine added as a disinfectant.

The term 'Total Trihalomethanes' (THMT) refers to four disinfection by-products (chloroform, bromodichloromethane, dibromochloromethane and bromoform) that may be present in a water sample.

b. Why are they filtered?

Behind the experiments with laboratory animals (rats and mice) there are also epidemiological studies on the effects of human exposure to disinfection by-products in drinking water. First, the relationship between cancer death and the use of chlorinated or non-chlorinated water was studied.

Later, studies showed that chlorinated drinking water increases the risk of rectal and bladder cancer. The risk of intestinal cancer was not significant, but increased for higher concentrations of disinfection by-product. (Morris, 1992)

A meta-analysis of several studies shows that there is a positive correlation between exposure to disinfection by-products in drinking water and bladder and rectal cancer. 9% of all cases of bladder cancer and 15% of rectal cancers are attributed to chlorinated drinking water and its disinfection by-products. This is down to 10,000 cases per year. (Morris, 1992)

The risk of bladder cancer increases after prolonged exposure to chlorinated drinking water

In 1990 and 1991 in Colorado (USA), population research was conducted to determine the relationship between disinfection of drinking water with chlorine and disinfection with chloramines and the frequency of bladder cancer. 327 people with bladder cancer were compared to 261 people with other types of cancer. On the basis of this Health Organization database, a profile of the drinking water consumed by patients was created.

This study showed that there is a relationship between years of exposure to chlorinated water and the development of bladder cancer. This risk increased after several years of exposure. After 30 years of exposure, the risk of bladder cancer was 1.8 times higher than when no exposure had occurred. The concentration of trihalomethanes, nitrates and chlorine residues was not associated with bladder cancer risk. *(McGeehin, 1993)*

14 to 16% of bladder cancers are caused by by-products of water disinfection

Research conducted in Ontario on the duration of exposure to disinfection by-products and the frequency of bladder cancer showed that there is a relationship between these two facts. The risk increased after long exposures or trihalomethane concentrations of 50 µg/L or more. 14 to 16% of bladder cancer cases can be attributed to exposure to disinfection by-products. *(King, 1996)*

Connections between exposure to disinfection by-products and bladder cancer

In Finland, research is being conducted on the link between long-term exposure to mutagenic and carcinogenic substances in drinking water and cancer. For this study, the exposure of 732 bladder cancer patients, 703 renal cancer patients and 914 others to drinking water was determined from data based on residence, water sources, historical data, water quality and water treatment. For men, there was a relationship between exposure and renal cancer risk. For women, this relationship was not significant. For both men and women, the relationship between exposure and bladder cancer was significant. *(Koivusalo, 1998)*

The risk of bladder cancer is higher because of the large number of people exposed to chlorinated drinking water

A comparison of the different studies on the relationship between chlorinated drinking water and bladder cancer shows that there is a relationship between prolonged exposures to chlorinated water and bladder cancer. This risk increases after several years of exposure. This risk is not very significant, but because many people have been exposed to chlorinated water for many years, this risk is significant because bladder cancer cases can be attributed to disinfection by-products. *(Kogevinas, 2003)*

The number of epidemiological studies on exposure to disinfection by-products and the influence on reproduction and birth defects is small. However, these studies show that there is a link between trihalomethane exposure and miscarriages, birth defects, and pregnancy delays. *(Wigle, 1998)*

To prevent the formation of chlorine disinfection by-products, other disinfectants are used. These disinfectants also produce disinfection by-products that can be harmful to human health.

For example, chlorine dioxide produces disinfection by-products such as chlorite or chlorate that have health effects on vulnerable people and newborn babies. The diseases and mortality rates of newborns were studied.

In one community, the water was disinfected with chlorine, in the other the water was disinfected with chlorine dioxide. The relationship between pregnant mothers' exposure to water treated with chlorine dioxide, premature births, and low birth weight was significant. However, there were no differences in the rate of miscarriage. (*Tuthill, R. 1982*)

In Norway, a study was carried out on the relationship between specific birth defects and the presence of organic matter and by-products of the disinfection of drinking water. The birth database of 285,631 Norwegians born between 1993 and 1998 was used. The risk of birth defects more specifically in the heart, breathing and urine traces were associated with exposure to disinfection by-products during pregnancy. The risk of defects in the abdominal belt increases significantly after significant exposure. (*Bing-Fang, 2002*)

[http://www.lenntech.fr/procedes/desinfection/sous-](http://www.lenntech.fr/procedes/desinfection/sous-produits/desinfection/desinfectants-sous-produits-sante.htm)

[produits/desinfection/desinfectants-sous-produits-sante.htm](http://www.lenntech.fr/data-perio/cl.htm)

<http://www.lenntech.fr/data-perio/cl.htm>

<http://premiumwater.fr/relation-entre-le-cancer-et-l-eau-chlore.html>

<http://www.natationpourtous.com/espace-pro/hygiene-securite/chloramines.php>

<http://www.legifrance.gouv.fr/affichCode.do?idSectionTA=LEGISCTA000006126943&cidTexte=LEGITEXT000006073189#LEGIARTI00000606746378>

22. Nitrites 0.50 mg/l

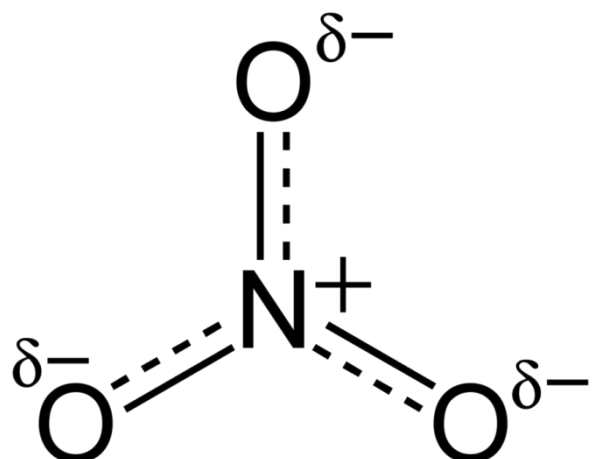
a. Where are they coming from?

The transformation of nitrates (NO_3^-) into nitrites (NO_2^-) by oxidation reduction.

b. Why are they filtered?

According to research:

Nitrates as such would not be carcinogenic.



Nitrites are also harmless as long as they do not transform into nitrosamines. However, studies have shown that nitrosamines cause cancer in animals.

<http://www.extenso.org/article/les-nitrates-et-les-nitrites/>

The nitrate ion is the stable form of nitrogen, formed by the association of one nitrogen atom with three oxygen atoms. Once ingested, it can be reduced to nitrite by bacteria in the body, especially in the mouth, but also in the small intestine and colon. From 25 mg/L, newborns may lack oxygen because nitrites from nitrates oxidize ferrous iron (Fe²⁺) from the hemoglobin of red blood cells to ferric iron (Fe³⁺). The resulting methemoglobin is unable to fix oxygen.

In an acidic environment, such as the stomach, the nitrite ion gives rise to nitrous acid which generates nitrogen dioxide (NO₂). Nitrogen dioxide is able to react with nitrogenous substances called amines to form very infrequent individuals, nitrosamines. Nitrosamines damage genes and cause cancer in all animal species.

The more nitrates are consumed in the water, the more nitrosamines are produced. Populations with high rates of esophageal and stomach cancers are also those with high levels of a nitrosamine, N-nitrosoproline. Several studies have found that water nitrates increase the risk of certain cancers - other studies have concluded that they have no influence.

In fact, the toxicity of nitrates varies depending on the environment in which they are metabolized. Vitamin C blocks the formation of nitrosamines by reducing nitrous acid (HNO₂) to nitrogen monoxide (NO). Vitamin E also blocks nitrosation by reducing the nitrite ion to nitric oxide. Coffee, garlic and green tea also prevent the appearance of nitrosamines.

On the other hand, the iron in red meat stimulates the formation of nitrosamines, the nitrite salt in sausages is a direct precursor of these substances.

Boiling water does not reduce its nitrate content. On the contrary, it concentrates them! Boiling water in an Aluminium pan can also convert Nitrates to Nitrites.

<http://www.lanutrition.fr/bien-dans-son-assiette/aliments/boissons/eau/les-nitrates-dans-leau-du-robinet.html>

<http://psep.cce.cornell.edu/facts-slides-self/facts/nit-heef-grw85.aspx>

23. Boron 1.0 mg/l

a. Where did it come from?

Boron and its compounds have many applications in various fields. The Boron element is used in particular in the metallurgical industry. Its high reactivity at high temperatures, particularly in the presence of oxygen and nitrogen, makes it a useful degassing metallurgical agent. It is used to refine aluminum and facilitate the heat treatment of malleable iron. Boron significantly increases resistance to high temperatures.

Boron is used in atomic reactors and in technologies using high temperatures. It has physical properties that make it attractive for missile construction and rocket technology, it has a low density, it is very hard, and has a high melting point... When boron fibres are used in load-bearing materials or epoxy-type matrices (or other plastics), the resulting material is stronger and stiffer than steel and 25% lighter than aluminium.

Borax, $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$, refined, is an important ingredient in some varieties of detergents, soap, water softeners, bath formula and cosmetics. It is also used as a flame retardant, fruit and vegetable disinfectant... Finally, it can be used in photovoltaic cells as semiconductors.

b. Why is it filtered?

Boron is a naturally occurring element in the environment. Humans can be exposed to boron through fruits and vegetables, water, air, consumer products...

Eating fish or meat does not increase the boron concentration in our body, because boron does not accumulate in animal tissues.

Exposure to boron in air or water is unlikely to occur, but there is a risk of exposure to boron dust in the workplace. You may also be exposed to boron with some consumer products such as cosmetics and laundry detergents.

When humans consume large amounts of food containing boron, the boron concentration in our body can increase to unhealthy levels. Boron can infect the stomach, liver, kidneys and brain and can eventually lead to death. When exposed to small amounts of Boron, irritation of the nose, throat or eyes may occur.

<http://www.lenntech.fr/francais/data-perio/b.htm>

24. Fluorides 1.5 mg/l

"WARNING: Keep out of reach of children under 6 years of age. If you accidentally swallow a dose higher than that required for brushing, seek professional help or contact a poison control centre immediately."



a. Where do they come from?

Fluorides are important industrial chemicals with multiple uses. The main uses are in the production of aluminium, the fluoridation of drinking water and the manufacture of fluorinated dental care products.

Who initiated water fluoridation?

Kellogs in the USA, helped by Rockefeller see

<http://winnipegalternativemedia.com/2014/01/kelloggs-fluoridation-foundation/>

According to the U.S. Toxic Substances Agency, of the 275 substances that pose a threat to human health, fluorine compounds are among the top 20 toxic substances.

The Commercial Toxicology Manual gives fluorine a toxicity of 3 (=moderately toxic) to 4 (=very toxic).

Fluorine has no colour, no smell and no taste: it is therefore impossible to know if it is present in the water we consume, in what we eat or in the air we breathe and especially in what quantity.

b. Why is it filtered?

"Fluoride is characterized by various mechanisms of toxicity. Initially, ingested fluoride affects the intestinal mucosa locally. It can then form hydrofluoric acid in the stomach, leading to irritation of the large intestine or corrosive effects. Following ingestion, the gastrointestinal tract is the first, as well as the most frequently affected system." Reference:
<http://www.emedicine.com/emerg/topic181.htm>

"The ingested fluoride is transformed in the stomach into hydrofluoric acid, which acts as a corrosive on the epithelial coating of the gastrointestinal tract.

Thirst, abdominal pain, vomiting and diarrhea are common symptoms. Other common symptoms are: hemorrhaging of the gastric mucosa, ulceration, erosions and edema."

Reference: Environmental Protection Agency. (1999). Recognition and Management of Pesticide Poisonings. 5th Edition.

<http://www.epa.gov/oppfead1/safety/healthcare/handbook/handbook.htm%00>

"Symptoms included: abdominal cramps (66 percent), nausea (62 percent), headache (49 percent), diarrhea (42 percent), vomiting (13 percent), diaphoresis (heavy sweating) (12 percent) and fever (4 percent)" *Reference: Petersen LR, et al. (1988). Community health effects of a municipal water supply hyperfluoridation accident. American Journal of Public Health 78: 711-3.*

"The estimated minimum dose of fluoride that caused symptoms was 0.3 mg per kilogram; 16 percent of affected patients received an estimated dose of less than 1.0 mg per kilogram. The minimum dose of fluoride for which an effect has been observed -- a dose of less than 1 mg of fluoride per kilogram - - is similar to that reported in some studies [...]" *Reference: Gessner BD, et al. (1994). Acute fluoride poisoning from a public water system. New England Journal of Medicine 330:95-9.*

<http://eausecours.org/esdossiers/article-fluor.pdf>

<http://www.qve.qc.ca/afq/toxicite.htm>

<http://www.lennotech.fr/data-perio/f.htm>

<http://freresertsoeurs.blogspot.fr/2010/02/fluor-genocide-de-londres-contre.html>

25. Copper 2.0 mg/l

a. Where did it come from?

World copper production is still increasing. This basically means that more and more copper is entering the environment. Rivers deposit copper-contaminated sludge on their banks as a result of wastewater discharge. Copper enters the air mainly during the combustion of fossil fuels. It remains in the air for a long enough period of time before settling when it rains. It is then mainly found in the soil. As a result, soils can contain a large amount of copper after the copper from the air has settled.

Copper can be released into the environment from natural sources and human activities. Examples of natural sources include wind-blown dust, rotting vegetation, forest fires, and dispersed seawater droplets. Some examples of human activity contributing to copper dispersion have already been given, other examples are mining, metal production, wood production and phosphate fertilizer production.

Since copper is dispersed by both natural and human processes, it is very widely distributed in the environment. It is often found near mines, industrial facilities, landfills and garbage crushers.

Copper can be found in many types of food, water and air. As a result, large amounts of copper are absorbed every day through eating, drinking and breathing. The absorption of copper is necessary, because copper is an element that is essential for health. Although humans can manage proportionately high concentrations of copper, excessive amounts can cause significant health problems.

Most copper compounds settle and bind to water sediments or soil particles. In general, soluble copper compounds are released into the environment after being released during its application in agriculture.

People living near smelters and processing copper ores into metal may be exposed to this exposure.

People who live in houses that still have lead pipes are exposed to higher copper levels. Copper can end up in drinking water through corrosion of pipes.

Occupational exposure to copper often occurs.

b. Why is it filtered?

In the workplace environment, copper contamination can cause a condition similar to influenza known as smelter's fever. This condition disappears after two days.

Long-term exposure to copper can cause irritation to the nose, mouth and eyes and may cause headaches, stomach aches, dizziness, vomiting and diarrhea. Intentional high doses of copper can cause kidney and liver damage and even death. It has not yet been determined whether copper is carcinogenic.

There are scientific articles that show a link between long-term exposure to high copper concentrations and a decline in intelligence in young adolescents. Research on this subject continues.

When copper is found in the soil, it binds strongly to organic matter and minerals. As a result, it does not travel very far and almost never enters groundwater. In surface waters, copper can travel long distances, whether suspended on mud particles or as a free ion.

Copper is not destroyed in the environment and, as a result, it can

accumulate in plants and animals when it is present in the soil. On copper-rich soils, only a limited number of plants are likely to survive. As a result, there is not much plant diversity near industries that produce copper.

Due to the effects on plants, copper is a serious threat to the production of agricultural land. Copper can seriously influence what happens on agricultural land, depending on the acidity of the soil and the presence of organic matter. Despite this, copper-containing fertilizers are still used.

Copper can interrupt soil activity because it negatively influences the activity of microorganisms and earthworms. The decomposition of organic matter is seriously slowed down as a result.

When the soil on farmland is contaminated with copper, animals absorb high concentrations, causing health problems. Sheep, in particular, suffer greatly from copper poisoning because the effects of copper on sheep occur even at very low concentrations.

<http://www.lenntech.fr/data-perio/cu.htm>

26. Nitrates 50 mg/l

a. Where do they come from?

The nitrogen cycle is largely atmospheric. Nitrates are formed in the stratosphere and troposphere⁸ from NO₂ and ozone. They can then combine with NO₂ to produce NO₅ or interact with mists... according to processes that are still poorly understood (there seems to be a *Nitrate sink in the atmosphere*, a reaction that removes nitrates from the air^{9, 10}).

NO_x also contributes to photochemical pollution, nitrate ion in the air can combine with organic compounds and nitrates exposed to solar UV are photosensitive, which explains a day/night variation in the level of nitrates in the environment and a different nitrate chemistry at night than during the day, especially over the sea.

There are 3 types of nitrates:

1. Potassium nitrate (formerly called saltpeter). It is mainly used for fertilizers (potassium and nitrogen elements), rocket engines and fireworks. It was used in the manufacture of black powder.
2. Sodium nitrate, formerly known as Chilean saltpeter to distinguish it from potassium nitrate. It is used in the production of fertilizers, pyrotechnics, smoke bombs, glass and enamels, etc.

3. Ammonium nitrate. It is mainly used as a fertilizer. When mixed with a reducer such as fuel oil, it is an explosive. This compound is stable; it must be primed or mixed with another body to explode. This is what happened during the AZF accident in Toulouse.

Map of France 2013 of nitrate pollution:

<http://www.developpement-durable.gouv.fr/Directive-Nitrates-les-zones.html>

As of 15 July 2015, approximately 55% of France's agricultural area is classified as a vulnerable area, corresponding to the regions where agricultural activity is most important. This revision resulted in the classification of 1,440 additional municipalities in addition to the 18,400 municipalities already concerned, mainly located in the Adour Garonne, Loire Bretagne, Rhône Méditerranée and Seine Normandie basins.

617 municipalities were downgraded in 2012 in view of the occasional improvement in the quality of surface and groundwater, reflecting the efforts made by farmers to control nitrogen pollution; these downgraded municipalities are mainly located in the Adour Garonne and Artois Picardie basins.

b. Why are they filtered?

According to the unifa (Union of Fertilization Industries), nitrates could be beneficial to health... (They are objective, concerning their livelihood!!!!)

<http://www.unifa.fr/sante-a-alimentation/nitrates-a-sante.html>

On the other hand, the CNRS explains that the combination of Nitrates + Pesticides forms carcinogenic compounds in the long term.

<http://www.cnrs.fr/cw/dossiers/doseau/decouv/potable/toxicChim.html>

Some effects appear to be negative for human health

The presence of "high concentration nitrate (>10 mg NI-1)" in drinking water:

- slightly increases the risk of several types of cancer, as they are an endogenous source of nitrites and subsequent nitrosating reactions producing "*N-nitroso*" compounds known to be highly carcinogenic and capable of acting systematically (in humans and in several species used as animal models:
 - colorectal cancer, with very low odds ratios of 1.22 (0.98-1.52) and 1.36 (1.08-1.70), and this risk may only concern proximal colon cancer, and this risk may only concern individuals deficient in vitamin C, the latter inhibiting the formation of Nitroso

compounds) and consuming a lot of meat. The association between cancer risk, nitrate exposure and vitamin C deficiency has been found for other types of cancer (oesophagus, see below);

- stomach cancer would also be increased, either with water nitrates or those contained in nitrate-rich plants such as spinach;
 - esophageal cancer;
 - kidney cancer (which seems to be associated only with the consumption of animal products containing nitrates or nitrites, not with drinking water). A water or diet rich in calcium would have a protective effect;
 - Ovarian cancer (cancer that appears in older women);
 - Bladder cancer (also in older women);
- Nitrates are also [endocrine disruptors](#):
 - They would disrupt the functioning of the thyroid as iodine [antagonistic](#) anions necessary for the proper functioning of the thyroid system and would have a goitrogenic effect [when](#) combined with a low iodine intake: nitrates disrupt the absorption of iodine in the intestine and thyroid due to their negative electrical charge (the human body absorbs or excretes ions according to their charge). However, this theoretical effect is not always confirmed by epidemiological studies or control studies and seems to be linked to nitrate doses that are much higher than the drinking water standards. In highly [iodine-deficient](#) populations, the effect seems to be nil.
 -
 - The effect of nitrates can be added to thiocyanates [and](#) perchlorates [A link](#) seems to exist with the risk of goitre and thyroid hypertrophy.

There are also positive effects: as in all studies concerning humans and animals, there is no absolute certainty because diets, people, habits, ages, lifestyles, emotions,... are different and make it impossible to isolate an element such as excessive nitrate behaviour from the whole or to generalize because each member of the whole has a different behaviour.

Conclusion

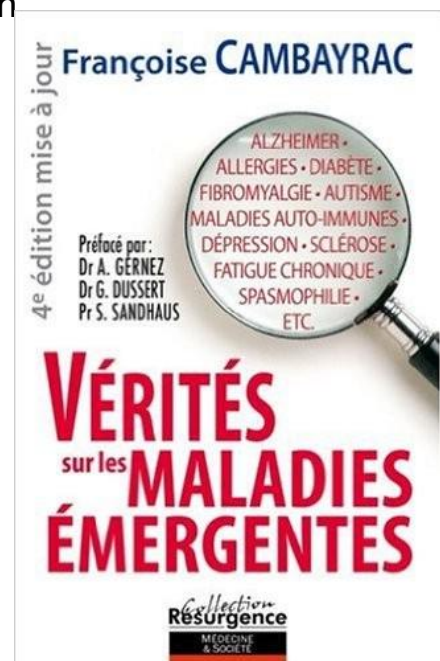
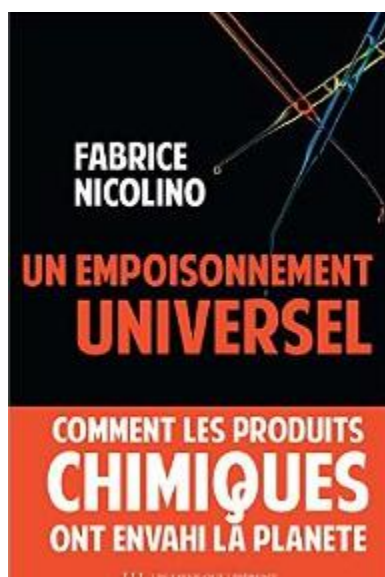
What do we learn from its chemical water pollution on industry?

The industrial way of life is harmful to the planet and its inhabitants, and the principle of maximum gain irremediably leads in the medium and long term to a multiplication of problems and solutions to overcome them, in short to self-supply the so-called market economy: this one is largely created from scratch.

The chemical industry uses products that are harmful to male and female fertility, as well as to mobility, both in water treatment and in the flagship systemic herbicide Roundup, and in the refinement of sugar, which is also present in overcooked vegetables.

Wars lead to the creation of ersatzs (substitute products in case of shortages) which once the war is over remain in use because they are more economical than using quality products: synthetic ammonia, hydrogenated oils, PVC, synthetic nitrogen,... while being an infinite source of income for the chemical industries, which also manufacture drugs to 'solve' problems caused by ersatzs.

To learn more and act on the chemical pollution that has settled in your body via tap water and food water and their consequences on your health: There are solutions banned in France presented in Françoise Cambayrac's book.



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