

# The Cause of the Sudden Infant Death Syndrome

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**Abstract:** This is a part of a main article titled "Our Friend CO<sup>2</sup>", which contains a study of CO<sup>2</sup>, by the way of old classical physics and chemistry knowledge, learnt from College to University about. Such study was done because the announced CO<sup>2</sup> capability for greenhouse was as incredible as the Harry Potter power. What was even more incredible was the fact that marvellous ability has just been discovered yesterday and exploited by ecologists just when needed. So this critical study drove to remind and examine of the benefits and misdeeds of that gas, and amongst the misdeeds is the asphyxiation of people or animals, when the CO<sup>2</sup> ratio in air is too much high. Here, we show that the CO<sup>2</sup> gas is the cause of the infant unexpected death. [The Journal of American Science. 2005;1(2):38-41].

## Introduction

Physical properties of CO<sup>2</sup> are described below.

**Density:** The first property is the density in comparison with the air density. CO<sup>2</sup> density is 1.51 times the air density.

**Weight of one litre of air:** 1.293 grams.

**Weight of one litre of CO<sup>2</sup>:** 1.952 grams.

**Rate of CO<sup>2</sup> in free atmosphere (about):** 300 parts by million in volume, or: 300 cube centimetres inside 1,000,000 cube centimeters, which means 0.6 grams of CO<sup>2</sup> for one air cube meter.

**The second important property is, roughly said:** sinking in the air. The CO<sup>2</sup> gas, free on a quiet air, falls to the ground like an old tub sinks in the sea. It would stay on the ground if the air was perfectly quiet, in fact it moves as other gas does, if air is moved around. So it is chiefly mixed with two other gas, nitrogen and oxygen, in the lower part of the atmosphere, and on every point the ratio does not remain 0.03 %, but it can fetch locally higher values.

## 1 The Breathing

**Composition of natural breathing air is shown in the following (%):** Nitrogen inspired 79.2, alveolus 80.4, ejected 79.2; Oxygen inspired 20.7, alveolus 14, ejected 15.4; CO<sup>2</sup> inspired 0.03, alveolus 5.6, ejected 5.4; Cadence at rest: Infant 35, 5 years 25, 40 years 15.

**Litres breathe out per minute (20°):** In bed 6, sitting 7, standing 8, walking 14, running 43.

The CO<sup>2</sup> production ways are numerous, the most

interesting are exposed in the main article, and here we consider only the CO<sup>2</sup> produced by our breathing.

Every combustion with oxygen produces a quantity of CO<sup>2</sup>. That gas is particularly produced by the human, and animal, breathing, as a result of chemical reactions, which are internal combustions, in our body.

The air we reject at every expiration contains approximately 5.4 % of CO<sup>2</sup> gas. Obviously that value is up everyone body, and is up to it's at moment activity.

## 2 The CO<sup>2</sup> Wells

The natural sources are numerous but a curious one is that: at the end of the 19e century and the beginning of 20e, in the Central Mountain Mass (in France) wells had been bored which automatically were full with gas CO<sup>2</sup> coming from volcanic ground, which was next down from to be used to the fabrication of gaseous drinks, like Seltz water.

The most part of the actual gaseous drinks are, more than ever, full with industrial made CO<sup>2</sup>.

Obviously everybody knows that gas is produced by every animal breathing, the most important being our own for numerous reasons.

The air we inhale normally contains 0.03 % of this gas. The air we reject contains almost 5.4 % of this gas, because our lungs do not use all the inhaled oxygen.

That is very important, and one can die if one forgets it, and really many people died for that missing, as we will see next.

## 3 The Mortal Wells

In 1938 my wife's uncle, who was not well maker, was dead in a friend's well where he went down to repair a pump. One of the four persons taking part of the operation immediately go back to keep help, but during that time the two people waiting near the well went down to give help to the first one who felt faint. The result was that two more dead persons.

Not any among who were round the well was specialist of well works, and all had forgotten that risk, which was well known at the moment. Indeed at this time it was taught on primary schools that people must not go down a well to work in without using a lit candle, or with a mouse, or with a canary.

Obviously that was in the case were one had not any pump to ventilate by sending fresh air or extracting vicious air. But generally pump was not used for little and short duration cleaning works.

The candle and little animals were used as advertising it was time going out, whether the flame began to sway, or to switch off, whether the animal, normally quick moving, was slowing down.

Another recent case: During 2004 summer, my daughter neighbour, lungs specialist doctor, went down his dry well, with his son, to clean it, and he told us: I began to fell uncomfortable and suddenly I say me "but I am fool !Let's get out immediately". The memory was come again. His speciality and the knowledge of his own lungs made that the fist little uncomfortable feeling made him warned, when, in the same case, most part of people would have ignored.

We must remember you the great number of people who died when cleaning wine tanks to receive the pressed grapes, or cleaning huge barrels for wine or beer, without thinking to remove the lower little panel, which had been created by old experienced people to allow the breathing CO<sup>2</sup> to escape and the fresh air to enter it.

Old people had drown out the lesson from accidents happened inside closed tanks which also exist in numerous manufacturing mills.

#### **4 The Enclosed Environments**

There often are persons who feels faint in sites badly ventilated and holding numerous people, such as packed churches, or meeting halls with not enough volume regarded the number of people.

These fainting are generally associated to the warmth, when in fact they are caused by the growing of the quantity of CO<sup>2</sup>, thrown back by the breathings. CO<sup>2</sup> which stagnates in the lower part of the atmosphere of the hall, and there is a corresponding diminution of the

oxygen quantity in that part.

Inside a full church, generally always closed, and better if there is a big lot of candles burning oxygen in the neighbourhood, vanishings are guaranteed.

The CO<sup>2</sup> accumulates near the ground because in that kind of meeting people don't practically move, whatever they are sitting or standing, they are quiet and don't move ambient air.

To move the ambient air would up the CO<sup>2</sup> and would make oxygen coming back to inferior part of the local atmosphere, then would improve breathing.

This effect of CO<sup>2</sup> stagnation in air, inside volumes in the shape of a bottom of well, with airtight bottom and sides, except the top, could really be the reason of unexplained death.

#### **5 The Castle St Bonnet Mummies**

On the floor of the church of this little village of the Loire (France department) there is a trap which allows access to a little place on the basement, probably a cellar at first. There is not any other access, then not any airing, except by the trap.

This cellar is visited because it contains few mummies, women, men and child. One assume to day, that human group had put themselves under cover during a local battle between catholic and protestant people, at the remote time of religious war. But people of the region always ask themselves questions about the cause of the death of such a group. Some people think about plague, but without arguments to justify such hypothesis.

It is probably quite simple: because the lack of airing the CO<sup>2</sup> of their breathing accumulated, the oxygen diminished, and they softly died by asphyxiation. It is really a soft death. It would have been necessary they get an escape for the CO<sup>2</sup>, by a hole on the bottom or on a side of the cellar; which was impossible. But obviously they ignored such a necessity, as numerous people ignore that to day.

A case of same shape but actual and immediately important is: The infant unexpected death. It is a well known accident, with an always mysterious origin, which happens as well in the modern maternity hospitals, fully equipped, as in the old ones, as well at hospital as at home. It is, more than probably, due to the fact that some marvellous modern cradles form real bottom wells, perfectly airtight.

Recently I saw at television a big maternity room with numerous cradles rows casted in plastic matter. The plastic is easily cleaned, then easy hygiene, all is

clean and perfect.

However, during night stillness, when all is quiet, when babies are sleeping without any movement, contrarily they do during the day, little by little, the CO<sup>2</sup> from their breathing accumulates inside the cradle, if airtight.

It is obvious that the air components do not get superposed layer in the cradle, but there is between the bottom and the summit of that cradle a gradient of ratio, which can be comprised between 0.03 %, clean air, and 5.4 %, polluted air from breathe.

The ratio of this CO<sup>2</sup> in the cradle air increases little by little, and becomes near the 5.4% ratio of the air rejected from lungs. In fact the breathe must cease before that ratio has reached inside the cradle.

To the infants, if their mouth, or nose, is situated on a low point of the cradle they can quickly asphyxiate themselves.

As all infants have not the same breathing respiratory, do not occupy the same volume in their cradle, do not have the same position, they are not all affected, fortunately. But alas, some time, one of them is submitted to all unfavourable conditions.

The oxygen absorption mechanism, and that of the reflex control of the breathe, needs necessarily a given gradient of the respective partial pressures for oxygen and CO<sup>2</sup> inside the lungs and consequently of the ratio of these gas inside the blood.

It immediately comes to mind that an autopsy must show that effect, it is a wrong idea. Even if one analyses the air contained in the lungs, one cannot find a ratio over the ratio of the expired air: 5.4%.

I don't know if the plastic cradles I saw at TV present that danger, because it would be enough it exist some holes, on the bottom or on the sides, to let the CO<sup>2</sup> pouring to ground. Which is his natural behaviour.

The actual instructions to let the infants sleeping on their back is good if the cradle is airtight and is not too much deep. By that way one makes up the breathing level in comparison with the CO<sup>2</sup> layer which always appears, and practically the risk is reduced, not eliminated. But if the mattress forms a soft hollow, as mothers like, that instruction can be ineffectual, the baby finish being in the gas layer. As soon as that layer, with too much CO<sup>2</sup>, reaches the infant mouth or nose, the asphyxiation is immediate.

All cradles are not plastic made and airtight, fortunately it exists numerous kinds made with linen. It seems good since air can cross through . Except if the linen covered with rubber, or oiled.

Without doing a search of all cases of airtight

cradles, one can say that nothing is worthing the good old straw or wicker baskets of our old men, which aired bedding and allowed that bad human CO<sup>2</sup> to cross over. We must not forget that even if all the industrial CO<sup>2</sup> was eliminated we would always keep that human CO<sup>2</sup>.

## **6 An English Recent Case**

One or two months ago press told us about an English woman who had been taken legal action against her for bad treatments to children and who had been finally relaxed. She had had three children, spaced by few years, who all three died when about one year old.

The deep medical enquiry during the trial showed that the deaths were due to the unexpected death of infant, what means a death without any apparent reason, all the medical surrounding being perfectly right.

It would be interesting to know if this woman had changed the cradle when the infant was near a year old, putting him in a dangerous position in a new cradle airtight, without knowledge of that danger. That change of cradle is a current practice and is necessary when the baby has grown, if the fist cradle was too little, consequently that is the first idea coming to mind.

Another hypothesis is that the first cradle was airtight and becomes too little, the baby takes more place, the free space for air with too much CO<sup>2</sup> is reduced and the upper layer reaches the sleeping baby. That is a recent case which can be used to verify that action of CO<sup>2</sup> .

It has been published that in U.K. 206 trials for same reasons had to be soon revised.

Perhaps are you thinking all that is pure hypothesis. Perhaps but they are worth to be exposed and examined to adopt a preventive behaviour.

That being, the reality of that cause of the infant unexpected death, more than probable, is easy to be verified by few experiments in true scale with cradles, some CO<sup>2</sup>, and guinea pigs, or rabbits, or any other quiet animal.

That tests will need some time and it would be interesting to advise baby parents who can secure easily and immediately their cradle, three or four holes on bottom of it are not expensive.

Let us yet remark that old cradles made with straw or wicker baskets presented less danger.

## **7 A Scientist Opinion**

An English professor has said, about these three unexpected deaths by the same mother that: "the

probability of such a case was 1 over 73 one hundred millions, then such occurrence was naturally impossible". What implies: the mother is guilty.

When he will give you works of probability about the Earth growing temperature, sent immediately that to the trash can. Besides do the same for other works of his, because he don't know anything about probability.

Another common kind of scientist will be arising if you speak him about that unexpected death, and he will tell you: "the asphyxiation is not due to the excess of CO<sup>2</sup> but to the lack of oxygen".

I bet about that way of explanation, so often used to minimize the value of a former assuming.

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