Oral Detox Pro Oral Rinse

Explanation of IAOMT position: Useful for those who still have mercury fillings in their mouth & product is suggested to “hopefully” only to decrease mercury vapor before and after removal. Recommendations are based solely on one article published in Townsend not peer reviewed. This product needs science but has promise and explores new issues.

Name of Scientific Review: Oral Detox PRO Oral Rinse

Alternative name(s) of Scientific Review: Oral Mercury Vapor reduction

This Scientific Review is related to: Medicine & Dentistry

This Scientific Review is a Product

Do you have a financial interest in any part of this SR? No

Purpose of the Scientific Review: Oral rinse to reduce mercury vapor during amalgam removal

Scientific Review History: A new product has been developed based on a previous product called NDF Formula by BioRay, Inc. This article, “The Mitigation of Mercury Vapor Inhalation and exhalation in people with Dental Amalgam Fillings” 2002 Timothy Ray, DMD lac Published in Townsend Letter for Doctors and patients, Nov 2002, #232, is the precursor of the SR and is essentially the same substance.

A brief description of the Scientific Review: An oral rinse, pre and post amalgam removal with the product.

A specific description of this Scientific Review:

Oral Detox Pro is a chlorella based oral rinse that has been shown to be effective in drastically reducing mercury vapor detectable in a mouth with amalgam fillings present. The supportive literature only documents the reduction of measurable intraoral mercury vapor. There is NO evidence, and no claims, about reducing absorption through the intraoral mucosa. This has not been studied, to the best of my knowledge. So based only on it’s demonstrated effectiveness at reducing intraoral mercury vapor, its recommended use in a mercury safe protective protocols is to rinse before the beginning of treatment (rinse for 30 seconds, suction the excess, don’t rinse with water afterward), reducing intraoral mercury vapor in the presence of mercury amalgams. Hopefully, residual product in the mouth during treatment may be protective. Then, rinse as above, immediately after amalgam removal to provide one more means of cleaning up the mouth post treatment.

Manufacturer(s): BioRay, Inc

Scientific Literature: Contact author as document is lengthy

Legal Aspects of this Scientific Review: None

Applicant Name: Paul Rubin, DDS, MIAOMT

Office Phone: 206-367-4712

Mailing Address: 9730 3rd Ave, NE

Office FAX: 206-367-4971

City: Seattle

Home Phone: 206-799-8215
Appendix A: This attached document was scanned in and as such, is lacking in form and some context. To really understand the content of this SR, this document is needed but was not incorporated directly into the SR by the author. Please contact the author for the actual document.

The Mitigation of Mercury Vapor Inhalation and Exhalation in People with Dental Amalgam Fillings

©2002 Timothy Ray OMD LAc Published in Townsend Letter for Doctors and Patients, November 2002, #232

Source of Inspiration for this Study A metal toxic patient, female, age 42, who had been doing extremely well on a detoxification program, called to report a sudden and inexplicable aggravation of her previous symptoms. The only difference we could determine was that her mother had moved in with her the day before the aggravation began. She got along fine with her mother. It finally surfaced that the mother had a mouthful of amalgam fillings and that the symptoms became distinctly worse while the mother was in the room with her. I instructed her to ask her mother to simply ‘brush, rinse and spit’ with a few drops of NDF 3 times a day. The daughters’ symptoms went away very quickly. Also, the mothers’ health took a distinct turn for the better.

This event raised several questions. We all know that people with amalgams are becoming more toxic with each breath they take, and nothing has yet been discovered to protect them while the amalgams are still in the teeth. For every breath they inhale, they also exhale (and or ‘outgas’) into the workplace and the environment in which they live, posing a lesser yet significant threat to those around them. This group, with amalgam fillings still present in the teeth, represents a huge patient population.

Abstract Is it possible to minimize the damage caused by the inhalation of mercury vapor leaking from amalgam fillings (precipitated by chewing, drinking hot beverages, teeth grinding, dental procedures, substandard ‘soft’ alloy preparations, galvanism) during pregnancy, while patients are waiting to get their amalgams replaced, during the procedure of having them replaced, or during heavy metal and chemical detoxification? DMPS, DMSA, and Metal-Free/peA are known to cause side effects if used while amalgams are still in the teeth and are therefore contraindicated for these patients. NDF, used as directed, has never been known to cause a side effect in any patient. We know that NDF causes the excretion of heavy metals predominantly via the urine from independent lab data. But can it bind to mercury vapor in the oral cavity? If it did, we would also have more insight into what it is doing after it gets into the body.

The following study was conducted using the Genesis Labs AAS (atomic absorption spectroscopy) Hg253 portable mercury vapor analyzer. An attempt was made to determine if the mercury vapor precipitated by chewing could be bound and then
discarded (identified as a decrease in mercury levels after brushing and spitting) without causing an increase in the oral presence of mercury (identified as an increase in the mercury level after brushing and spitting).

It was found that NDFTM in the amount of 10 drops repeatedly and effectively bound 100% (dose related) of the mercury vapor precipitated by Chewing, and did not cause the precipitation of additional mercury from amalgam fillings into the oral cavity, as measured by atomic absorption spectroscopy.

Pre Test Safety Check A 6 mm2 piece of amalgam alloy containing mercury, silver, copper and zinc was submerged and agitated in 1 ml of NDFTM, sealed, and left to sit for one hour. The following pre and post measurements were observed: There was no change in conductivity (mS/cm), mercury content (Dithizone reagent), or emanation of mercury vapor immediately upon opening of the test container (mg/m3). This reassured us that conducting the test would not cause further toxification of the participants.

Preliminary Substance Tests and Control The oral cavities of all persons in the study were measured with the Hg253 at rest, after chewing gum, and after brushing and rinsing with various substances. Peak values are reported in milligrams per meter cubed (mg/m3). Measurements were taken through a tube placed in the center of the oral cavity while the lips were closed and the person breathed through the nose. The number and age of amalgams, and the presence or absence of gold fillings were recorded as a reference.

NDFTM (a 10 drop dose containing 10 mgs. nanonized chlorella) was compared to 10 mg of normal 'cell wall broken' chlorella and then again to 100 and 500 mg of normal chlorella, all mixed with water. MouthMagic TM and Vitamin C were compared because MouthMagic TM contains 300 mg vitamin C per ounce, and we wanted to see what part the vitamin C might be playing in the effect. We used reverse osmosis water for the control, also curious to see if it had any metal binding effect of its own. DMPS, DMSA and Metal-Free/peA were not tested as they are contraindicated while amalgams are present in the teeth. EDTA was not tested because it is not known to primarily bind to mercury.

Substances

<table>
<thead>
<tr>
<th>Substance</th>
<th>Quantity</th>
<th>Effect</th>
</tr>
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<tbody>
<tr>
<td>NDFTM</td>
<td>10 drops</td>
<td>100%</td>
</tr>
<tr>
<td>Chlorella (test 1)</td>
<td>10 mgs</td>
<td>28.6%</td>
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<tr>
<td>Chlorella (test 2)</td>
<td>100 mgs</td>
<td>50%</td>
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<tr>
<td>Chlorella (test 3)</td>
<td>500 mgs</td>
<td>100%</td>
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<tr>
<td>MouthMagic</td>
<td>300 mgs</td>
<td>72%</td>
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<tr>
<td>Controls</td>
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<td>R/O water rinse only</td>
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<td>N 3/15 N</td>
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<td>N</td>
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<td>10/15</td>
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<tr>
<td>10 drops</td>
<td>100%</td>
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<tr>
<td>100%</td>
<td>100 mg</td>
<td>50%</td>
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<tr>
<td>500 mgs</td>
<td>100%</td>
<td>10, 72%</td>
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<tr>
<td>300 mg</td>
<td>45%</td>
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</table>

In
Normal chlorella finally performed equally to NDFTM, but at a 500 mg dose, which required brushing and rinsing with the entire quantity, and then rinsing again with rlo water. This was extremely messy and distasteful to the patient as compared to a mere 10 drops of NDFTM. Interesting to note that it took 50 times more normal chlorella to bind as much mercury vapor as NDFTM, which highlights the effectiveness of the 'nanonization' process. This explains why most of the testing done with normal chlorella has shown it to be 'lacking' as a heavy metal chelator.

Study Group. Following the selection of the most convenient and efficient method based on the above study, the following study was conducted with 19 people. 5 showed no detectable elevation of mercury after chewing (possibly harder, older fillings as all of these people had had them in for between 2050 years). 2 did not have time to brush, rinse and re-test. The remaining 12 are reported below. The oral cavities of all persons in the study group were measured with the Hg253 at rest, after chewing, and after brushing and rinsing with either 5 or 10 drops of NDFTM.

<table>
<thead>
<tr>
<th>Code</th>
<th>Age</th>
<th>#/ of amalgams in years</th>
<th>GDI/</th>
<th>fillings</th>
<th>Resting</th>
<th>Resting SpH</th>
<th>mgf/m</th>
<th>Post</th>
<th>PO/ht ch- wing wash ma/m</th>
<th>ma/m</th>
<th>%</th>
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<td>6/22 N</td>
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<td>Dose:</td>
<td>6.3</td>
<td>6.5 7.4 7.1 6.4 6.4 7.3 6.0</td>
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<td></td>
<td>10 drops</td>
<td>NDF &lt;.001</td>
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<td>100% .131 .040 100%</td>
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<td>.100% .019 &lt;.001 100%</td>
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<td>&lt;.001 100% .046 100%</td>
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<td>100% .51 17.66%</td>
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<td>100% .022% .084 100%</td>
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<td>.046</td>
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DD

50 32 64 47
6/37 N 10/16 N 6/30 2
N N N 1
N N N N
GL JT LW 28 AS 38 11130
1M 42 DO 32
2/30
10/16
Dose: 5 droD$ NDF .097
<.001 <.001 .054
LB 32 DO 32 10/16
18 EB 22 5/10
5/32
12/12

* brushed for 30 seconds, also notice the massive relea$!; of mercury in this person with newer fillings • • brushed for 3 minutes

Background: Safe Limits of Exposure The American Conference of Governmental Industrial Hygienists (ACGIH) has established a threshold level value of 0.025 mg/m³ of mercury for an eight hour time p~riod. The ACGIH additionally recommends that women of chill9bearing age should not be exposed to air concentrations of mercury
greater than 0.010 mg/m³. Additional regulatory agency guidelines for mercury exposure levels are as follows. The Mine Safety and Health Administration (MSHA), National Institute for Occupational Safety and Health (NIOSH), and the World Health Organization (WHO) have established an exposure limit of 0.050 mg/m³ for an eight-hour time period. The Occupational Safety and Health Administration (OSHA) has established a ceiling (peak) exposure level of 0.100 mg/m³.

\[
\begin{array}{|c|c|c|}
\hline
\text{Agency} & \text{Exposure Limit} & \text{Time Frame} \\
\hline
\text{OSHA} & 0.100 \text{ mg/m}^3 & \text{peak} \\
\text{NIOSH} & 0.050 \text{ mg/m}^3 & \text{8 hours} \\
\text{WHO} & 0.025 \text{ mg/m}^3 & \text{8 hours} \\
\text{MSHA} & 0.010 \text{ mg/m}^3 & \text{8 hours} \\
\hline
\end{array}
\]

Notes

Ceiling exposure limits for childbearing women

\[
\begin{array}{|c|c|}
\hline
\text{Agency} & \text{Exposure Limit} \\
\hline
\text{OSHA} & 0.08 \text{ micrograms per day} \\
\text{WHO} & 0.120 \text{ mg/m}^3 \\
\text{MSHA} & 0.010 \text{ mg/m}^3 \\
\hline
\end{array}
\]

\text{Background: Measurements, Conversions, Nomenclature}

One ppm (part per million) of mercury (molecular weight 200.59) at 70°F, at 29.9 in. of Hg (sea level) equals 8.22 mg/m³ or 8220 µg/m³ of mercury.

One ppb (part per billion) Hg is equal to .0082 mg/m³. One ppm = 1 mg/L = 1 g/ml = 1000 ppb. To convert from milligrams to micrograms = x1000 or move 3 decimal places to the right. To convert from micrograms to milligrams = 1000 or move 3 decimal places to the left.

\text{Background: Dental Amalgams Hazard}

Amalgams contain 50% mercury, 35% silver, 9% tin, 6% copper and a trace of zinc. A single dental amalgam filling with a surface area of only 0.4 sq. cm is estimated to release as much as 15 micrograms of mercury per day primarily through mechanical wear and evaporation. In direct contradiction to the published literature, an ADA spokesman estimated that only 0.08 micrograms of mercury per amalgam filling are taken in per day. The average individual has eight amalgam fillings and could absorb up to 120 micrograms (0.120 mg/m³) of mercury per day from their amalgams.

The primary route of mercury absorption into the body is through the inhalation of mercury vapor. The mercury vapor from the amalgams is lipid soluble and passes readily through cell membranes and across the blood brain barrier. The human body retains approximately 75% of the mercury that is inhaled. Animal studies show that radioactively labeled mercury released from ideally placed amalgam fillings appears quickly in the kidneys, brain and wall of the intestines. The mercury escapes continuously during the entire life of the filling primarily in the form of vapor, but also abraded particles. Chewing, brushing, and the intake of hot fluids stimulate this release. Gold placed in the vicinity of an amalgam restoration produces a 10-fold increase in the release of mercury.

Measurement of Mercury Vapor from Dental Amalgams

"The current ADA estimate that only 0.08 micrograms of mercury per amalgam per day is taken into the human body does not take into consideration that up to five-sixths of the mercury released would be into the tooth (that area of the amalgam that exists below the visibly exposed amalgam surface) and not into the oral air. In addition, some mercury in the oral air would be rapidly absorbed into the saliva and..."
oral mucosa (mercury loves hydrophobic cell membranes) and also not be measured by the mercury analyzer. The ADA estimate does not include the increase that would occur with amalgams in the mouth when chewing, grinding the teeth, drinking hot liquids or in the presence of galvanism, which all greatly increase the release of mercury. Further, as the mercury analyzer pulls mercury containing oral air into the analysis chamber, mercury free ambient air rushes into the oral cavity decreasing the mercury concentration. Taking all of this into account you can calculate that most mercury analyzers could not detect this "estimated" 0.08 micrograms/day level of mercury even if you had several amalgams. However, the fact is that it is quite easy to detect mercury emitting from one amalgam using these (mercury vapor) analyzers. Therefore, the "estimate" by this ADA spokesman is way too low...

According to this study, a person with amalgams mobilizes (inhales or exhales) between 1 - 50 ppb mercury vapor per (mouth) breath or swallow per mouthful of chewed food per meal per day, most of which is swallowed. According to the ACGIH peak limit of exposure for women of childbearing age of 1.21 ppb mercury, eating anything more than one half of one mouthful of food at a time, or more than 2 mouthfuls in an eight hour period, would be out of the question and recognized as unsafe according to the lowest levels detected during this study. That's not enough food per day, especially for a pregnant woman, nor does the situation offer an acceptable option: starve or be poisoned.

**Mid-Data Reality Check**
Mercury is neurotoxic to some degree at any level, and has pernicious synergistic effects in combination with many forms of bacteria, other metals, and chemicals. Though we can measure exposure and excretion levels, we cannot yet measure cumulative body burden levels. Levels way below what is considered as 'safe' devastate some patients, especially allergic ones. Others, reminiscent of the 90 year old who subsists on Big Macs, seem to at least temporarily tolerate higher levels. The bottom line for this author is that if the patient has a 'complaint' or imbalance in conjunction with heavy metal exposure, addressing the toxicity issues first leads to greater and longer lasting clinical improvements than merely addressing the symptom.

**Tobacco Smoking: Of Interest**
It is known that the tobacco plant efficiently concentrates mercury out of the soil, so while preparing to use the Hg253 unit, we measured the smoke coming off of an additive free tobacco cigarette (0.014 mg/m³ of Hg) versus the exhaled smoke of the same cigarette (0.004 mg/m³ of Hg). The smoker effectively filters out the 'danger level' of mercury in tobacco smoke into their own body, therefore it is the uninhaled secondary smoke that is of most danger to others in the vicinity. For the smoker, that's roughly 1 ppb mercury per puff.

**Age of Amalgams vs Out Gassing Observation**
It was interesting to note that many of the people tested with uncracked amalgams over 25 Code Age

<table>
<thead>
<tr>
<th>Age of amalgams</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR 59 BL 62 KR 50 KS 49 SW 42 SR 35</td>
<td></td>
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</tbody>
</table>

years old were no longer out gassing after chewing.
Some Applications of the Data NDFTM can be used to safely and effectively rid the oral cavity of precipitated mercury vapor after chewing, eating, brushing or otherwise disturbing teeth containing amalgam fillings. The dose required during brushing can be estimated from the above data according to number and age of amalgams, relative hardness of amalgams, normal length of chewing, and duration of brushing. In general, the less they use (5 drops), the longer they have to brush, rinse and spit (3-4 minutes). The more they use (10 drops), the shorter the cleaning time (30 seconds to 1 minute).

The necessity of dealing with amalgam fillings in a timely manner can easily be demonstrated by repeating the above experiment, as can the effectiveness of treatment with NDFTM. If the cost of a mercury vapor analyzer is prohibitive ($15~25K for a new pro model), the unit can be rented for short periods, and 'measurement' appointments scheduled and delegated.

During detoxification, while amalgams are still in the teeth, the patient brushes with 10 drops NDFTM, spits and then rinses with rlo water before taking the dose of NDFTM as drops down the back of the throat, followed by a glass of pure water. Because up to 5/6 of the surface of an amalgam can be inside the tooth, and thus not out gassing into the oral cavity, this cleansing procedure is therefore not a complete alternative to having amalgam fillings replaced. It does however minimize and mitigate the inhalation and exhalation exposure.

Conclusions
We managed to prove that we could get mercury vapor to go down the sink instead of down the throat, which is a definite improvement, but I have yet to hear about a plan for dealing with it after it goes down the sink or toilet and into the environment. Who pays the bill for that? The various organizations, companies and people who deceived us into thinking it was safe to put mercury into our teeth?

1. Please goto www...h.e.al!hvdclIQXPI~and click on Lab Results on the Site Map. 2. Genesis Laboratory Systems, Inc. 1005 North 12th street Grand Junction, CO 81501 (970) 241-0889 (888) 210-0465 fax (910) 241-1239 www.genlabsystems.com hh=(!lyW;enl|h=n--Illi..J2m j see Conversion Calculator at wWW"11dNliIlhygiene.cp!!!l. and conversion formulas at '"ww...--c(h... --
4. Toxicological Profile for Mercury. U.S. Department Of Health & Human Services, Agency for Toxic Substances and Disease Registry, March 1999 published by Division of Toxicology/Exposure Information Branch, 1600 Clifton Road NE, E-29, Atlanta, Georgia 30333
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Svare CW, Peterson Le, Reinhardt JW, Boyer DB, et,a1; The effects of dental amalgams on mercury levels in expired air. J Dent Res 1981;60:1668-1671


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