BRMI CONFERENCE 2018

SMART Protocol

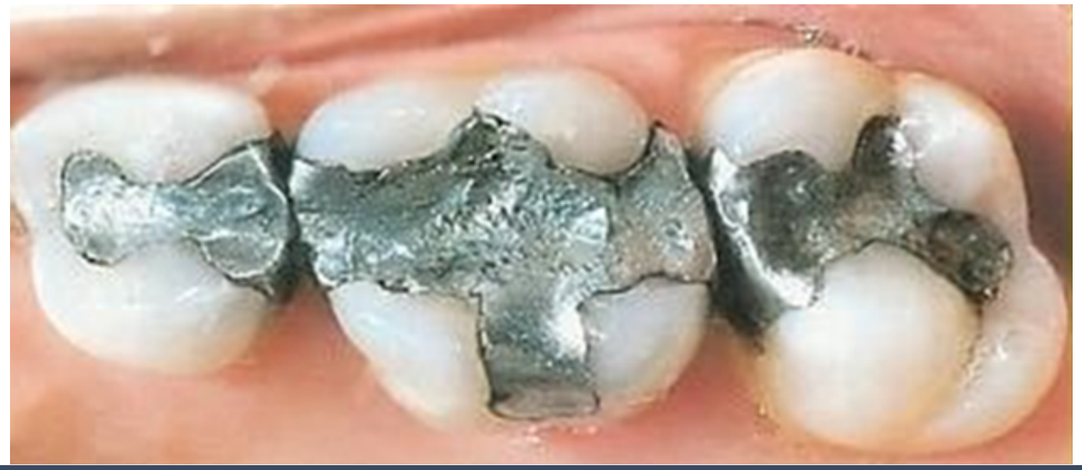
May 12, 2018

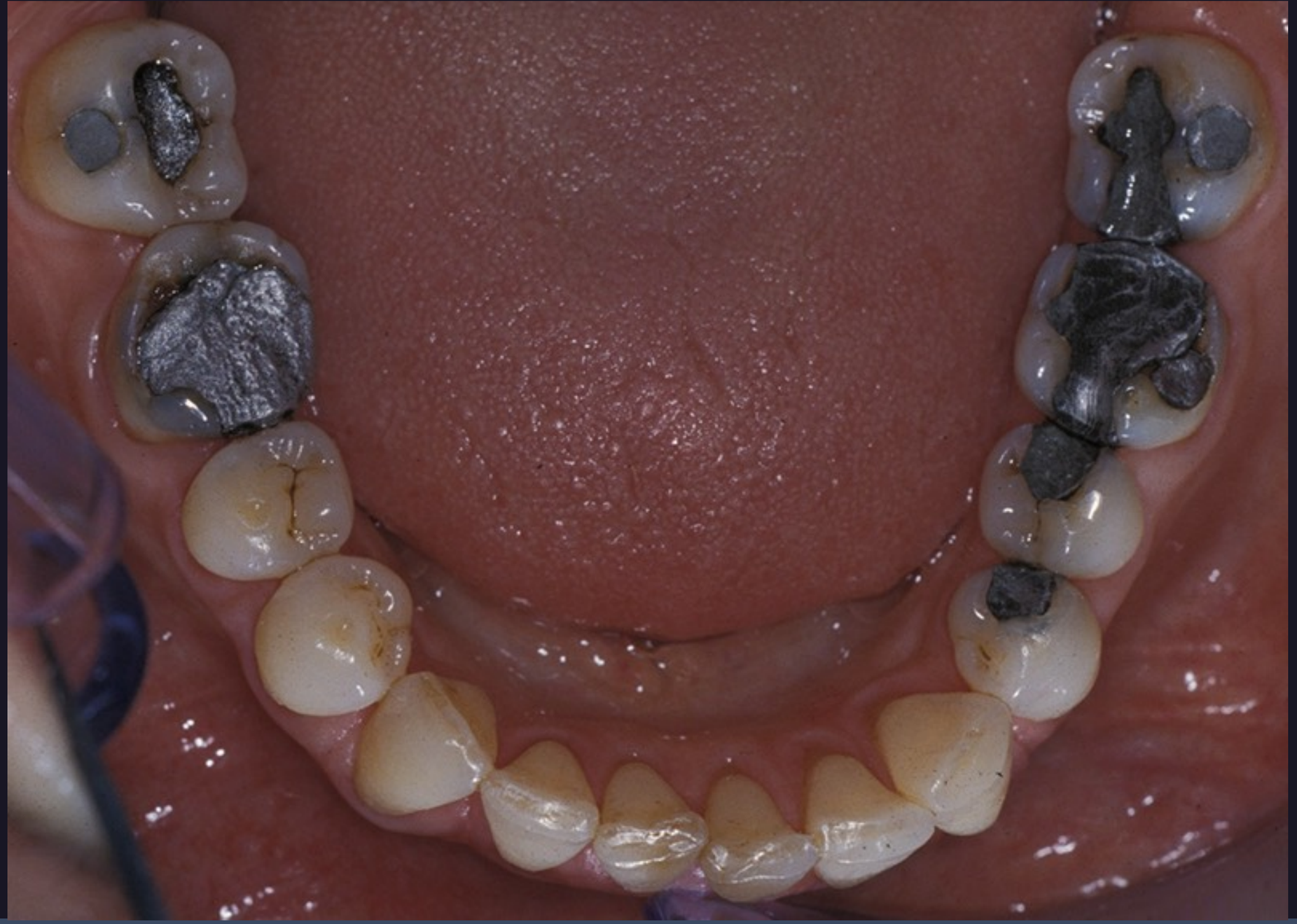
Jack Kall, DMD, FAGD, MIAOMT


SMART
SAFE MERCURY AMALGAM REMOVAL TECHNIQUE
www.theSMARTchoice.com
IAOMT

Amalgam Mercury Fillings Are…

- Often referred to as “silver” fillings
- Comprised of
  - 50% elemental mercury
  - 50% combination of silver, copper, tin and zinc
- Created by a mixing process referred to as trituration





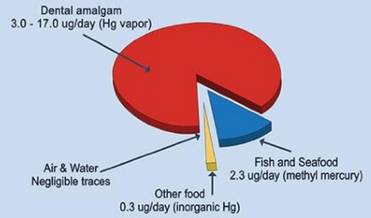
What is the risk? Dental amalgam, mercury exposure, and human health risks throughout the lifespan.

Kall J, Just A, Aschner M. Chapter 7 in Epigenetics, the Environment, and Children's Health across Lifespans. Springer. 2016.

All **silver-colored fillings are dental amalgams**, and each and every one of these fillings is comprised of 45%-55% mercury. Research has shown that **mercury is continuously emitted** from amalgam fillings, and it is absorbed and retained in the body.

Sources of Human Mercury Exposure

(World Health Organization [WHO], 1991)

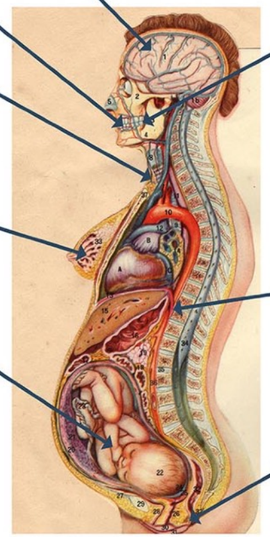


Dental Mercury Exposure and Risk

- Toxic effects of this mercury exposure vary by individual.
- One or a combination of symptoms can be present and can change over time.
- Symptoms can take many years to manifest themselves.
- 67 million Americans exceed the intake of mercury vapor considered "safe" by the U.S. EPA.
- 122 million Americans exceed the intake of mercury vapor considered "safe" by the California EPA.
- As of July 1, 2018, the EU has banned dental amalgam fillings for children under 15 and pregnant and breastfeeding women.

An estimated 80% of the **mercury vapor released by dental amalgam mercury fillings** is absorbed by the **lungs and passed to the rest of the body, particularly the brain, kidney, liver, lung, and gastrointestinal tract.** The half life of metallic mercury varies depending on the organ where the mercury was deposited and the state of oxidation.

Mercury deposited in the **brain** can have a half life of up to several decades.



Mercury vapor taken into the body binds to sulfhydryl groups of protein and to sulfur-containing amino acids throughout the body. **Mercury vapor, which is lipid soluble, can cross the blood-brain barrier** with ease and is converted into inorganic mercury in the cells by catalase oxidation. This inorganic mercury is eventually bound to glutathione and protein cysteine groups.

Studies that have found the **mercury concentration in breast milk** increases as the number of amalgam fillings in the mother increases.

The half life of mercury in the **whole-body and kidney regions** has been estimated at 58 days.

Maternal mercury levels are known to impact the fetus. Research on fetal and infant risks from dental amalgam has provided significant data associating the number of maternal amalgam fillings with mercury levels in cord blood; in the placenta; in the kidneys and liver of fetuses; in fetal hair; and in the brain and kidneys of infants.

Patients with amalgam fillings excrete over ten times more **mercury in their feces** than those without mercury fillings. It has been estimated that in the U.S., this is over 8 tons of mercury flushed out to sewers, streams, and takes per year.

Epigenetics of Dental Mercury

A growing volume of recently published scientific research is examining how mercury exposure, including that from dental amalgam fillings, can pose highly significant risks to individuals with specific genetic traits including the CPOX4, APOE, BDNF, MT, COMT, MTHFR, and PON1 polymorphisms.

Health Conditions Associated with Dental Mercury Exposure

Allergies, especially to mercury	Alzheimer's disease	Amyotrophic lateral sclerosis (Lou Gehrig's disease)
Antibiotic resistance	Autism spectrum disorders	Autoimmune disorders/ immunodeficiency
Cardiovascular problems	Chronic fatigue syndrome	Complaints of unclear causation
Hearing loss	Kidney disease	Micromercurialism
Multiple sclerosis	Oral lichenoid reaction and oral lichen planus	Parkinson's disease
Periodontal disease	Psychological issues such as depression and anxiety	Reproductive dysfunction
Suicidal ideations	Symptoms of chronic mercury poisoning	Thyroiditis

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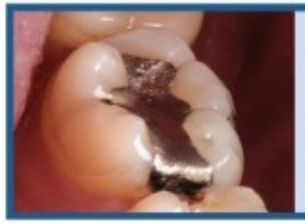

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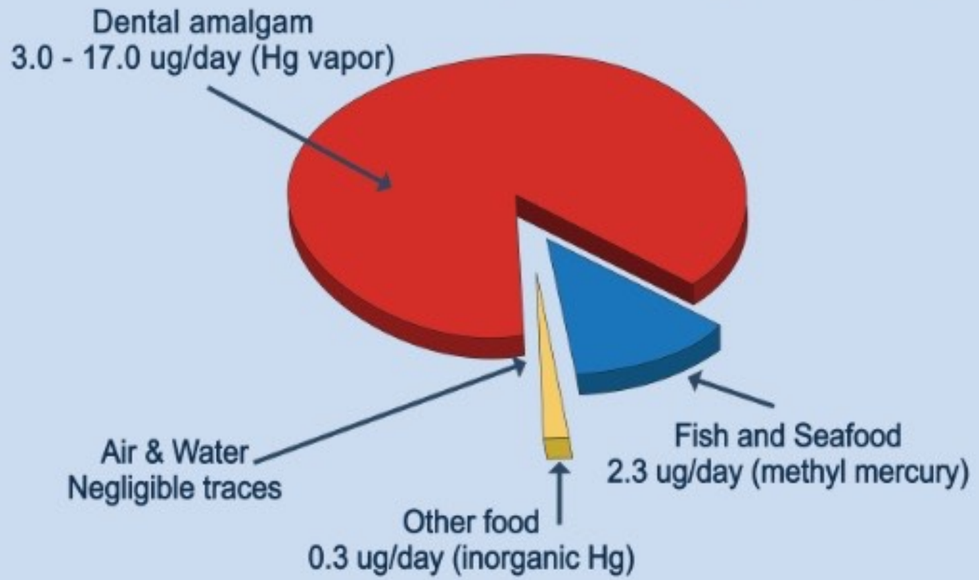

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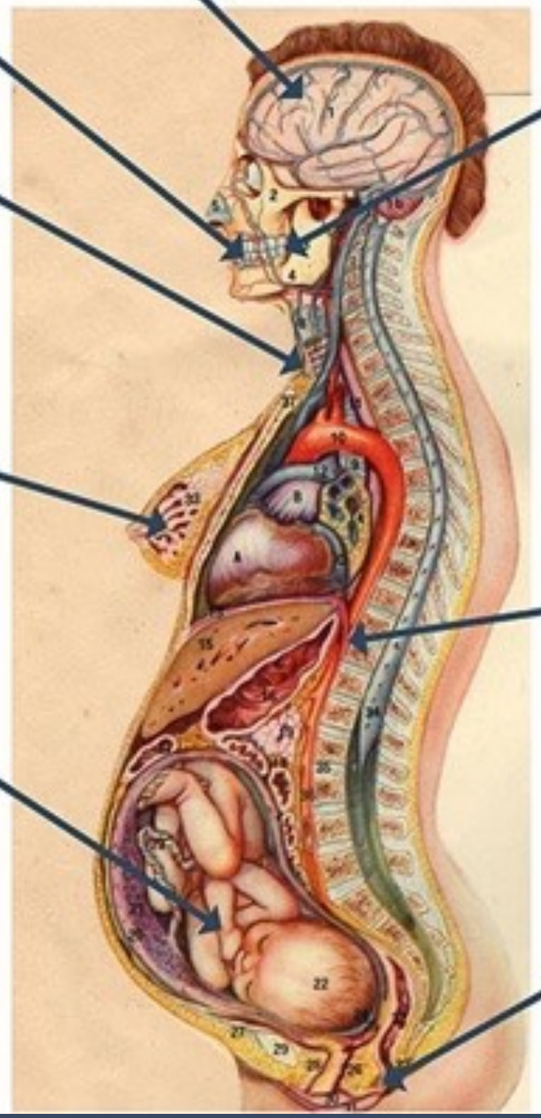

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Susceptibility and effects of mercury toxicity

Epigenetics of Dental Mercury

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Faculty of Medicine

&

Advanced Media for Learning

AML

UNEP

MINAMATA CONVENTION ON MERCURY

TEXT AND ANNEXES

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MINAMATA CONVENTION

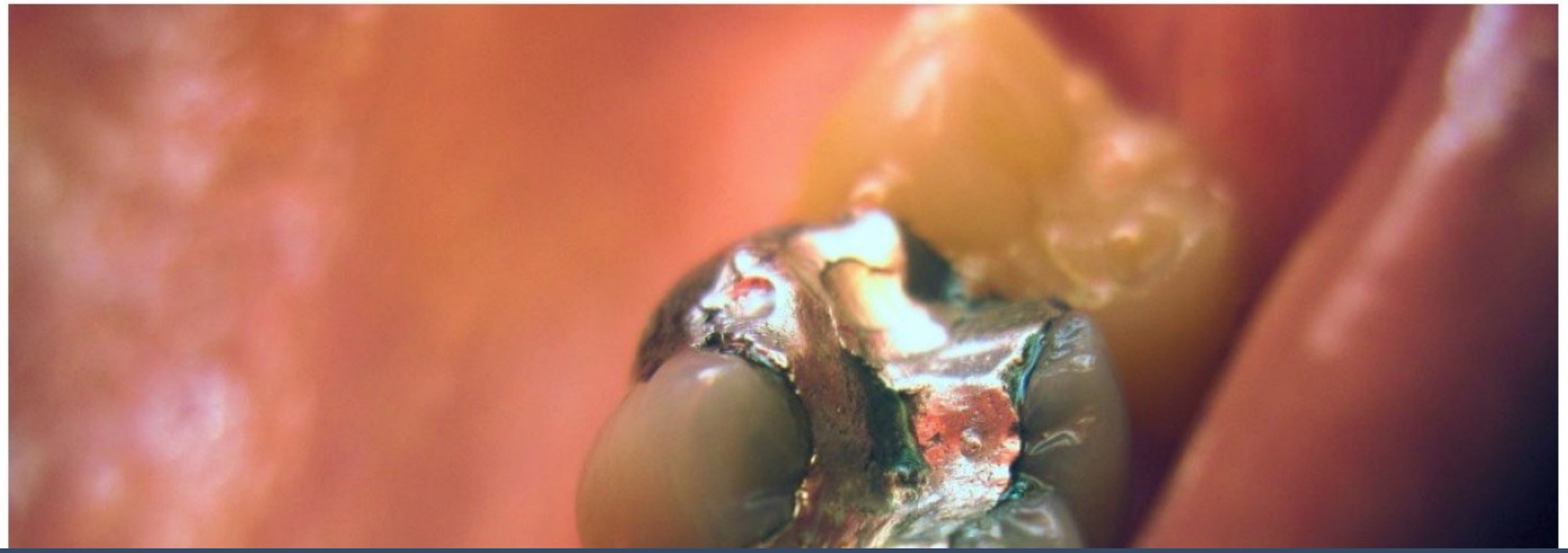
Part II: Products subject to Article 4, paragraph 3

Mercury-added products	Provisions
Dental amalgam	Measures to be taken by a Party to phase down the use of dental amalgam shall take into account the Party's domestic circumstances and relevant international guidance and shall include two or more of the measures from the following list: (i) Setting national objectives aiming at dental caries prevention and health promotion, thereby minimizing the need for dental restoration; (ii) Setting national objectives aiming at minimizing its use; (iii) Promoting the use of cost-effective and clinically effective mercury-free alternatives for dental restoration; (iv) Promoting research and development of quality mercury-free materials for dental restoration;

medgadget

Dental Amalgam Market Trends Estimates High Demand by 2023

FEBRUARY 5TH, 2018 MARKET RESEARCH FUTURE RELEASES



ADA Accepted
American Dental Association ®

DOUBLE SPILL Gray/Gray

EACH CAPSULE CONTAINS:
600 mg. ALLOY / 600 mg. MERCURY

Actual text & logos from an amalgam label

WARNING Ingestion: May cause Neurotoxic Nephrotoxic effects.
Inhalation: May cause Bronchiolitis, Pneumonitis Pulmonary Edema
Eyes & Skin: May cause redness and irritation to eyes and skin
Acute Exposure: May cause sensitization dermatitis and possible visual disturbances
California Prop 65 Warning: This product contains mercury, a chemical known to the State of California to cause birth defects or other reproductive harm.
Store at temperature no higher than 25' C.
Mercury Complies to ISO 1560: I985
Keep Out Of Reach Of Children
Caution: Federal law restricts this device to sale by or on the order of a dentist.

SAFETY DATA SHEET

Product names: **WYKALLOY, PHASEALLOY, ORIGINAL D**

SDS Drawn up: 2013-08-21 SDS Revised:

1. Identification of the substance / preparation and of the company

Trade names:	**Wykalloy, Phasealloy, Original D**		
Chemical name:	Mercury, Hg, CAS-no [7439-97-6] and metal powder (alloy)		
Field of application:	Metallic powder + metallic mercury in a plastic pestel, to produce amalgam for dental fillings		
Supplier:	**Wykle**		
Postal address:	2222 College Parkway	Telephone no:	775-887-7500
Postcode and town:	Carson City NV 89706	Fax no:	775-882-7952
Country:	USA	E-mail:	info@wykleresearch.com
Emergency telephone:	813-248-0585	Contact:	Dave Koepper

2. Hazards identification

Classification: Very toxic and Dangerous for the environment.

Adverse physicochemical effects: Heating up mercury will release toxic fumes. Mercury is incompatible with alkali metals, acetylenes, azides, ammonia, amines, halogens, carbides, metals, acids.

Adverse human health effects: Mercury vapour is highly toxic. Mercury may cause adverse health-effects.

Adverse environmental effects: Mercury is very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

Further information: Do not mix mercury with other materials without taking precautions. Persons with impaired kidney or respiratory function, or a history of allergies or a known sensitization to mercury may be more susceptible to the effects of the substance.

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Adverse human health effects: Mercury vapour is highly toxic. Mercury may cause adverse health-effects.
Adverse environmental effects: Mercury is very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.
Further information: Do not mix mercury with other materials without taking precautions. Persons with impaired kidney or respiratory function, or a history of allergies or a known sensitization to mercury may be more susceptible to the effects of the substance.
Classification of the substance or mixture: Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]:
Specific target organ toxicity - repeated exposure (Category 1); Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1); Acute toxicity, Inhalation (Category 2); Reproductive toxicity (Category 1B)
Classification according to EU Directives 67/548/EEC as amended
May cause harm to the unborn child. Very toxic by inhalation. Toxic: danger of serious damage to health by prolonged exposure through inhalation. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
Label information

Pictogram
Signal word: Danger
Hazard Statements: H330 Fatal if inhaled. H360 May damage fertility or the unborn child. H372 Causes damage to organs through prolonged or repeated exposure. H410 Very toxic to aquatic life with long lasting effects.
Precautionary statements:
P201 Obtain special instructions before use. P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. P273 Avoid release to the environment. P284 Wear respiratory protection. P310 Immediately call a POISON CENTER or doctor/ physician. P501 Dispose of contents/ container to an approved waste disposal plant.

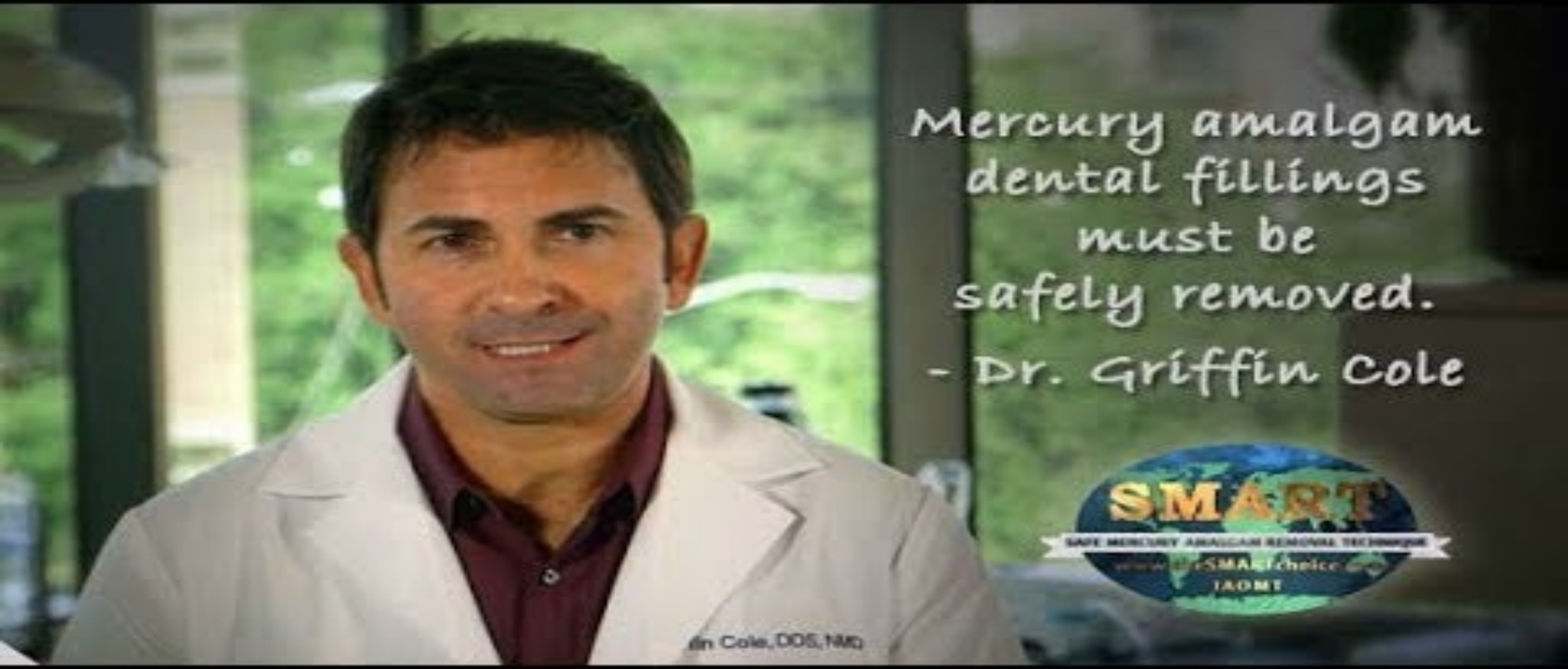
3. Composition / information on ingredients

Component	CAS-no	Einecs-no	Content (%)	Classification**
Mercury, Hg	7439-97-6	231-106-7	50,0	Repr. 1B, Acute Tox. 2, STOT RE 1, Aquatic Acute 1, Aquatic Chronic 1, H330, H360. H372, H410*
Silver, Ag	7440-22-4	231-131-3	21,6	
Tin, Sn	7440-31-5	231-141-8	15,4	
Copper, Cu	7440-50-8	231-159-6	13,0	

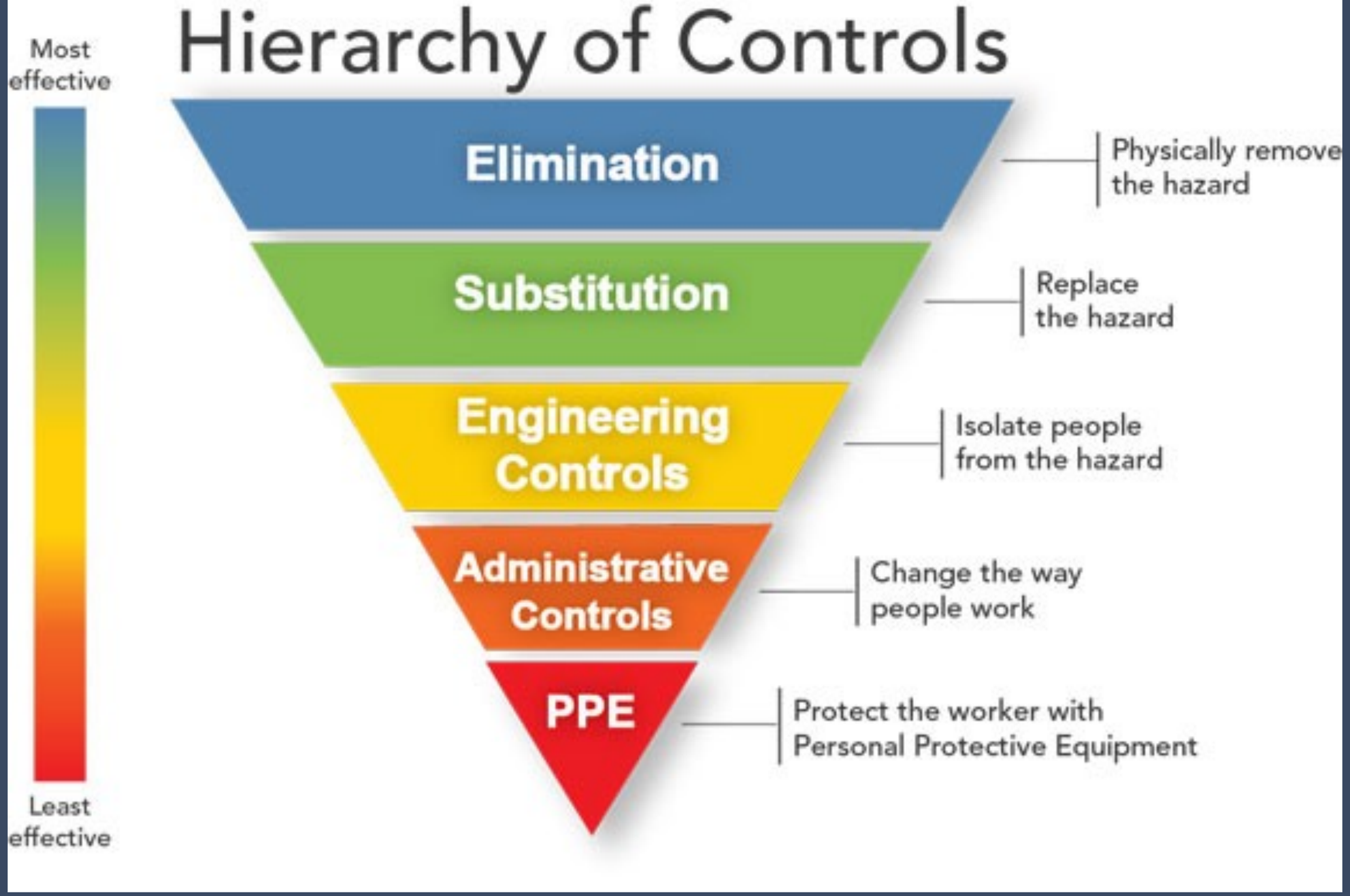
* The full wordings of the phrases are listed in Section 16

Our regulatory agencies have failed us

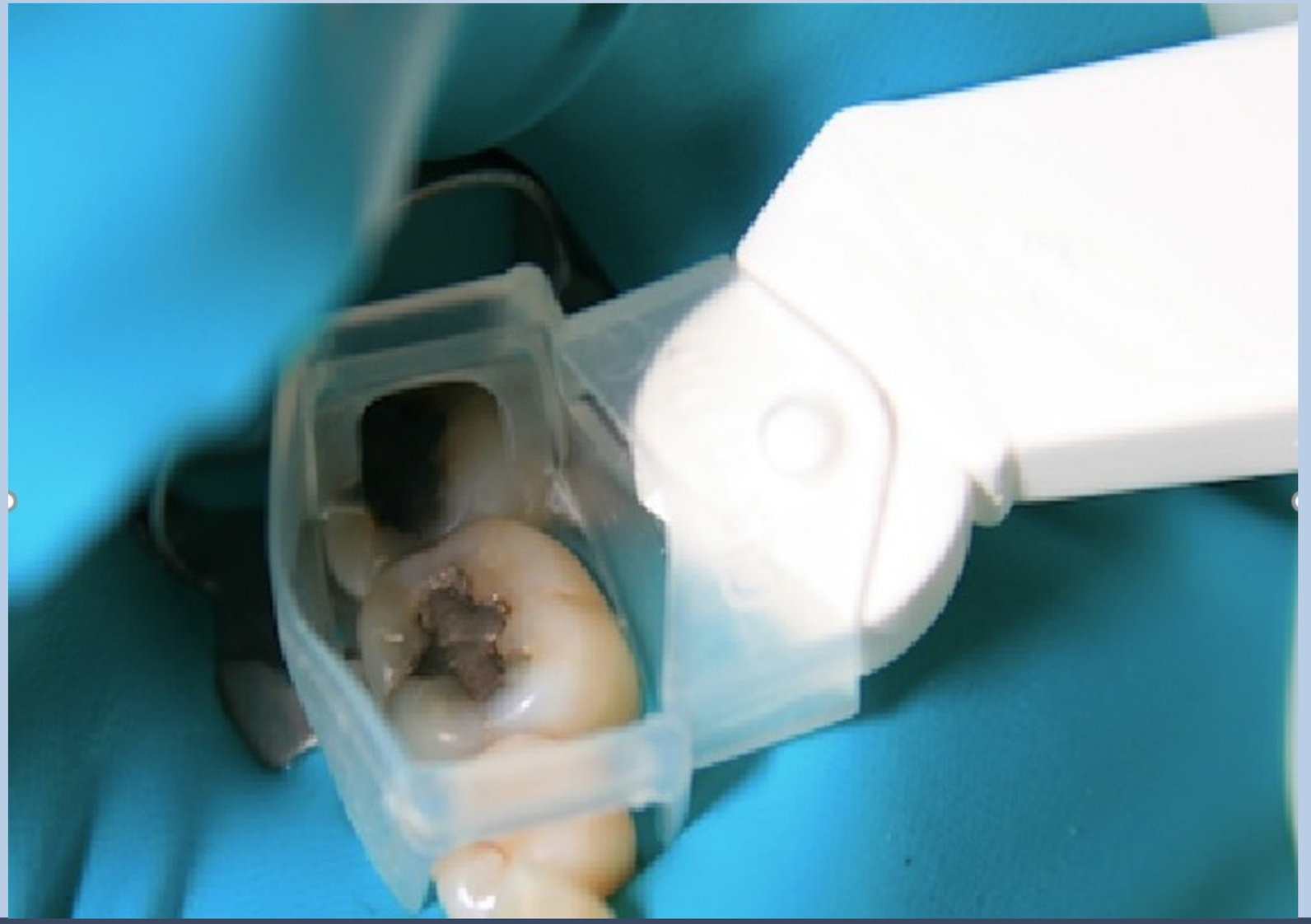
- FDA
  - Hearings
  - Lawsuit
- CDC
- EPA
  - Haven’t performed a reassessment for mercury since 1995
  - Fortunately implemented rule mandating amalgam separators
- OSHA/NIOSH
  - Doesn’t enforce current regulations for workplace safety in dentistry


Mercury amalgam
dental fillings
must be
safely removed.
- Dr. Griffin Cole
SMART
SAFE MERCURY AMALGAM REMOVAL TECHNIQUE
IAOMT

Hierarchy of Controls



Clean-up device



Patient and Staff Protection: IQ Air – Dental Hg FlexVac

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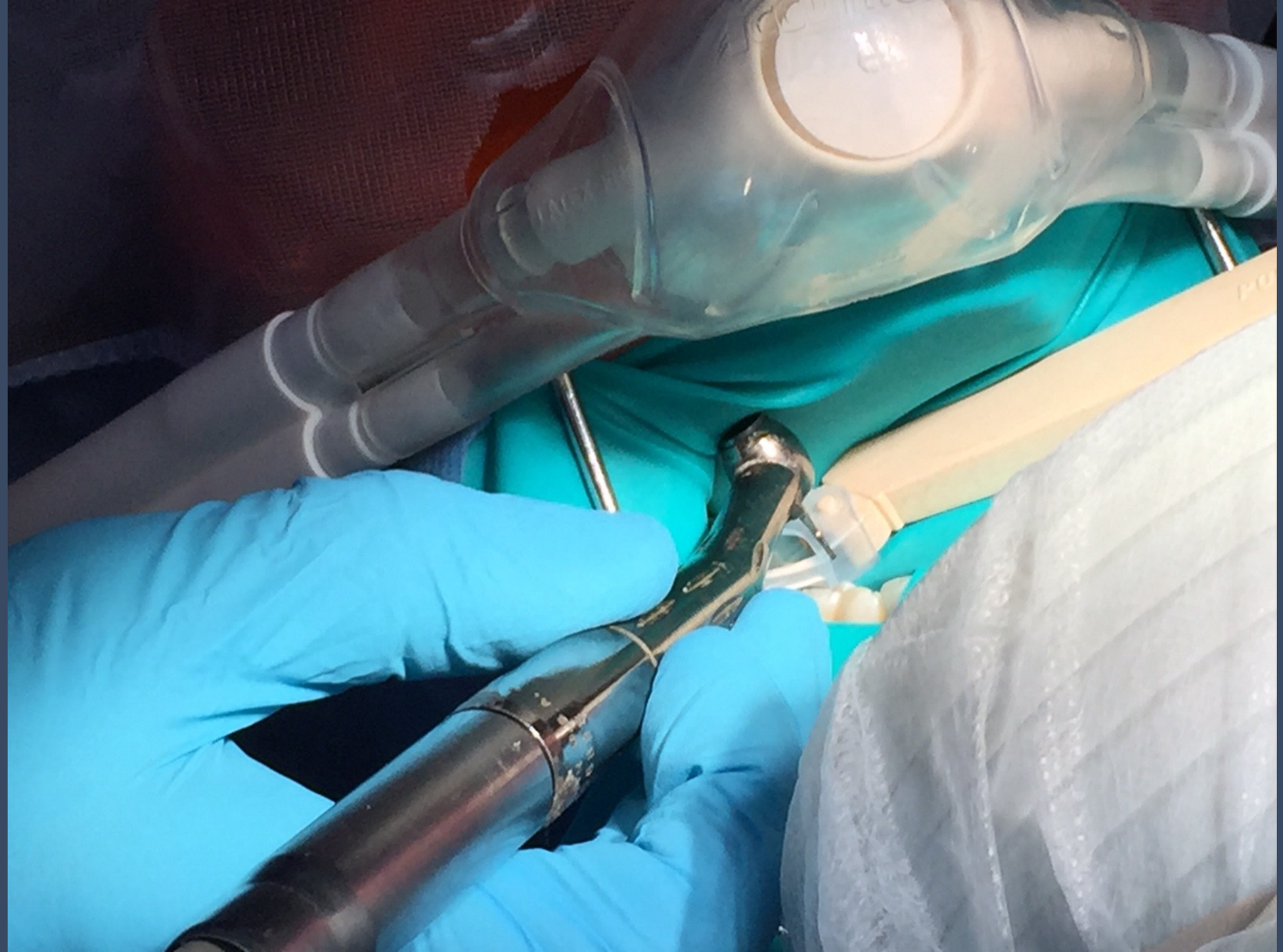

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Avoiding metals

Lupus. 1994 Dec;3(6):449-53.

Autoimmunity and heavy metals.

Bigazzi PE[1].

Author information

Abstract

This brief review is focused on those **heavy metals** (cadmium, gold and mercury) that have strong associations with **autoimmunity**. Cadmium treatment of rats and mice results in autoimmune responses that vary with species and inbred strain of animals. However, there is no solid evidence demonstrating that the renal pathology observed in humans exposed to cadmium has an autoimmune pathogenesis. More clear-cut are the autoimmune effects of preparations containing gold salts, that have been widely used in the treatment of rheumatoid arthritis. Gold may cause autoimmune thrombocytopenia, immune complex-mediated glomerulonephritis and other autoimmune disorders. Similarly, there is solid evidence that mercury can induce autoimmune disease both in humans and experimental animals. The lessons to be derived from metal-induced **autoimmunity** relate to structure-activity relationship, pathogenesis, etiology and genetics. They probably apply to xenobiotic-induced autoimmune disease in general.

Neuro Endocrinol Lett. 2006 Dec;27 Suppl 1:7-16.

Diagnosis and treatment of metal-induced side-effects.

Stejskal V[1], Hudecek R, Stejskal J, Sterzl I.

http://www.melisa.org/pdf/Metal-induced-side-effects.pdf

Abstract

Environmental factors are recognized as a cause of the increasing frequency of allergic and autoimmune diseases. In addition to external pollutants, metal ions released from dental restorations or from other body implants might trigger inflammation in susceptible subjects. In humans, genes governing metal-induced inflammation and autoimmunity are not yet known. In clinical praxis, metal-sensitive patients will present various symptoms ranging from oral mucosal changes and skin disease to excessive fatigue and autoimmune diseases. Since genetic markers of genetic susceptibility in man are not known, one has to rely on the phenotypic markers. Such biomarkers might be certain detoxification enzymes but also the presence of metal-specific memory cells in the blood. With the increasing use of metal implants in medicine and dentistry, it is important to have a proper tool for the diagnosis of metal allergy in susceptible subjects. After nickel, gold is now the second most common sensitizer. In addition to patch test, an in vitro blood test, an optimized commercially available lymphocyte transformation test (MELISA) is discussed. Both tests were used for the diagnosis of metal allergy in a selected group of 15 patients who suffered from clinical metal sensitivity in addition to other health problems. The concordance of the two tests was good but MELISA detected more metal allergies than patch test. The removal of incompatible dental material (RID) resulted in long-term health improvement in the majority of patients. We postulate that in vivo, metal ions activate T-cells, initiating systemic inflammation, which, through cytokines, affects the brain and hypothalamus-pituitary-adrenal axis. We postulate that in vivo metal ions will activate T-cells starting systemic inflammation which, through cytokines affect the brain and hypothalamus-pituitary-adrenal (HPA) axis. The treatment and rehabilitation of metal sensitive patients is based on a firm understanding and recognition of individual susceptibility. RID has to be done done with extreme caution and according to standard working protocol. If performed properly, this treatment can result in decreased systemic inflammation and improved health in sensitized patients.

Rev Med Brux. 2010 Jan-Feb;31(1):44-9.

[Allergies to dental metals. Titanium: a new allergen].

[Article in French]

Evrard L[1], Waroquier D, Parent D.

Author information

Abstract

Oral allergies are underdiagnosed by dental health professionals. Patients with an oral allergy complain of various symptoms such as burning or tingling sensations, with or without oral dryness or loss of taste, or of more general symptoms such as headache, dyspepsia, asthenia, arthralgia, myalgia. The signs of oral allergy include erythema, labial oedema or purpuric patches on the palate, oral ulcers, gingivitis, geographical tongue, angular cheilitis, perioral eczematous eruption, or lichenoid reactions localized on the oral mucosa. There is an increase in the prevalence of oral allergies to **metals** used in dental materials. Allergy to gold included in dental prosthesis has been well documented since the years eighties. Recently, titanium, used in orthopedic devices and oral implants, considered as an inert material, can induce toxicity or allergic type I or IV reactions. These reactions to titanium could be responsible for unexplained successive failure cases of dental implants in some patients (named "cluster patients"). The risk of an allergy to titanium is increased in patients who are allergic to other **metals**. In these patients, an evaluation of allergy is recommended, in order to exclude any problem with titanium medical devices. We stress the importance of a multidisciplinary approach to take into account patients with an oral allergy, with participation of specialists from dental and dermatologic fields.

AUTOIMMUNE DISEASES AND METAL IMPLANTS AND DEVICES

April 11, 2018

By Amanda Just, MS, and Jack Kall, DMD, MIAOMT

Dedicated to the late Vera Stejskal, PhD, whose life's work is featured in this article

Full article: https://thesmartchoice.com/wp-content/uploads/Metal-Implants-and-Autoimmunity.pdf

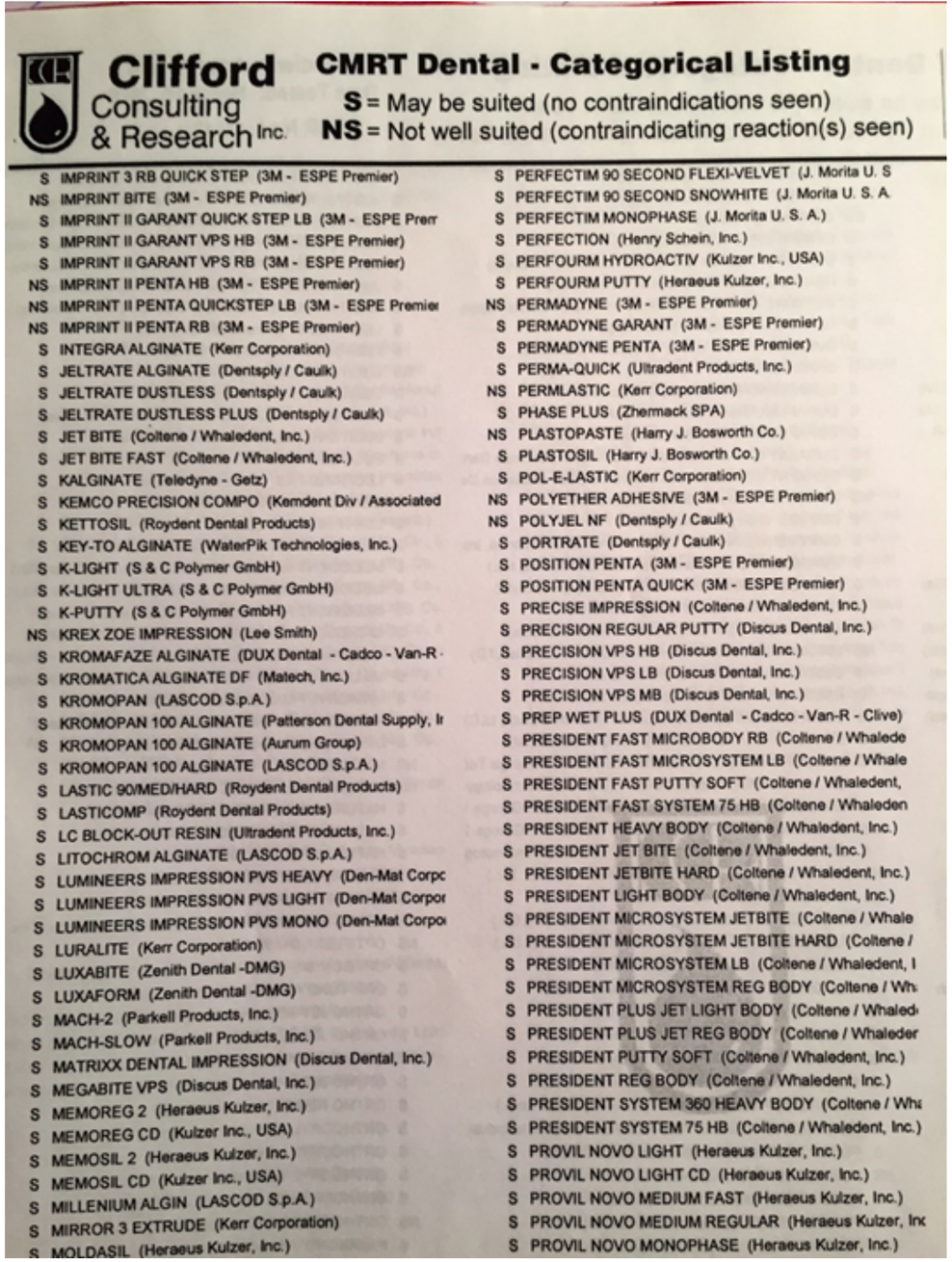
Abridged List of Metals Used in Dentistry and Medicine

Product	Metals
Dental Bridges, Crowns, Partial Dentures, and Implants	• These items can contain aluminum, chromium, cobalt, copper, gallium, gold, indium, iridium, iron, manganese, nickel, palladium, platinum, silver, titanium, vanadium and more.[70] [71] [72] [73] • Items made of cobalt-chromium-molybdenum steel contain those elements in addition to aluminum, nickel, titanium, and others.[74] • Research has found that some of these dental materials can contain lead.[75]

Abridged article: https://thesmartchoice.com/autoimmune-diseases-metal-implants-devices/

Dental Biocompatibility Testing

- Patient's blood sample sent to a laboratory
- Serum evaluated for antibodies (IgG, IgM) to the 94 chemical ingredients used in dental products
- Report provides a detailed list of which dental materials could result in a reaction
- Two labs: Biocomp Laboratories and Clifford Consulting and Research



Clifford Consulting & Research Inc.

CMRT Dental - Categorical Listing

S = May be suited (no contraindications seen)
NS = Not well suited (contraindicating reaction(s) seen)

S IMPRINT 3 RB QUICK STEP (3M - ESPE Premier)	S PERFECTIM 90 SECOND FLEXI-VELVET (J. Morita U. S
NS IMPRINT BITE (3M - ESPE Premier)	S PERFECTIM 90 SECOND SNOWHITE (J. Morita U. S. A.
S IMPRINT II GARANT QUICK STEP LB (3M - ESPE Prem	S PERFECTIM MONOPHASE (J. Morita U. S. A.)
S IMPRINT II GARANT VPS HB (3M - ESPE Premier)	S PERFECTION (Henry Schein, Inc.)
S IMPRINT II GARANT VPS RB (3M - ESPE Premier)	S PERFOURM HYDROACTIV (Kulzer Inc., USA)
NS IMPRINT II PENTA HB (3M - ESPE Premier)	S PERFOURM PUTTY (Heraeus Kulzer, Inc.)
NS IMPRINT II PENTA QUICKSTEP LB (3M - ESPE Premier	NS PERMADYNE (3M - ESPE Premier)
NS IMPRINT II PENTA RB (3M - ESPE Premier)	S PERMADYNE GARANT (3M - ESPE Premier)
S INTEGRA ALGINATE (Kerr Corporation)	S PERMADYNE PENTA (3M - ESPE Premier)
S JELTRATE ALGINATE (Dentsply / Caulk)	S PERMA-QUICK (Ultradent Products, Inc.)
S JELTRATE DUSTLESS (Dentsply / Caulk)	NS PERMLASTIC (Kerr Corporation)
S JELTRATE DUSTLESS PLUS (Dentsply / Caulk)	S PHASE PLUS (Zhermack SPA)
S JET BITE (Coltene / Whaledent, Inc.)	NS PLASTOPASTE (Harry J. Bosworth Co.)
S JET BITE FAST (Coltene / Whaledent, Inc.)	S PLASTOSIL (Harry J. Bosworth Co.)
S KALGINATE (Teledyne - Getz)	S POL-E-LASTIC (Kerr Corporation)
S KEMCO PRECISION COMPO (Kemdent Div / Associated	NS POLYETHER ADHESIVE (3M - ESPE Premier)
S KETTOSIL (Roydent Dental Products)	NS POLYJEL NF (Dentsply / Caulk)
S KEY-TO ALGINATE (WaterPik Technologies, Inc.)	S PORTRATE (Dentsply / Caulk)
S K-LIGHT (S & C Polymer GmbH)	S POSITION PENTA (3M - ESPE Premier)
S K-LIGHT ULTRA (S & C Polymer GmbH)	S POSITION PENTA QUICK (3M - ESPE Premier)
S K-PUTTY (S & C Polymer GmbH)	S PRECISE IMPRESSION (Coltene / Whaledent, Inc.)
NS KREX ZOE IMPRESSION (Lee Smith)	S PRECISION REGULAR PUTTY (Discus Dental, Inc.)
S KROMAFAZE ALGINATE (DUX Dental - Cadco - Van-R	S PRECISION VPS HB (Discus Dental, Inc.)
S KROMATICA ALGINATE DF (Matech, Inc.)	S PRECISION VPS LB (Discus Dental, Inc.)
S KROMOPAN (LASCOD S.p.A.)	S PRECISION VPS MB (Discus Dental, Inc.)
S KROMOPAN 100 ALGINATE (Patterson Dental Supply, I	S PREP WET PLUS (DUX Dental - Cadco - Van-R - Clive)
S KROMOPAN 100 ALGINATE (Aurum Group)	S PRESIDENT FAST MICROBODY RB (Coltene / Whalede
S KROMOPAN 100 ALGINATE (LASCOD S.p.A.)	S PRESIDENT FAST MICROSYSTEM LB (Coltene / Whale
S LASTIC 90/MED/HARD (Roydent Dental Products)	S PRESIDENT FAST PUTTY SOFT (Coltene / Whaledent,
S LASTICOMP (Roydent Dental Products)	S PRESIDENT FAST SYSTEM 75 HB (Coltene / Whaleden
S LC BLOCK-OUT RESIN (Ultradent Products, Inc.)	S PRESIDENT HEAVY BODY (Coltene / Whaledent, Inc.)
S LITOCHROM ALGINATE (LASCOD S.p.A.)	S PRESIDENT JET BITE (Coltene / Whaledent, Inc.)
S LUMINEERS IMPRESSION PVS HEAVY (Den-Mat Corpc	S PRESIDENT JETBITE HARD (Coltene / Whaledent, Inc.)
S LUMINEERS IMPRESSION PVS LIGHT (Den-Mat Corpor	S PRESIDENT LIGHT BODY (Coltene / Whaledent, Inc.)
S LUMINEERS IMPRESSION PVS MONO (Den-Mat Corpo	S PRESIDENT MICROSYSTEM JETBITE (Coltene / Whale
S LURALITE (Kerr Corporation)	S PRESIDENT MICROSYSTEM JETBITE HARD (Coltene /
S LUXABITE (Zenith Dental -DMG)	S PRESIDENT MICROSYSTEM LB (Coltene / Whaledent, I
S LUXAFORM (Zenith Dental -DMG)	S PRESIDENT MICROSYSTEM REG BODY (Coltene / Wh
S MACH-2 (Parkell Products, Inc.)	S PRESIDENT PLUS JET LIGHT BODY (Coltene / Whaled
S MACH-SLOW (Parkell Products, Inc.)	S PRESIDENT PLUS JET REG BODY (Coltene / Whaleder
S MATRIXX DENTAL IMPRESSION (Discus Dental, Inc.)	S PRESIDENT PUTTY SOFT (Coltene / Whaledent, Inc.)
S MEGABITE VPS (Discus Dental, Inc.)	S PRESIDENT REG BODY (Coltene / Whaledent, Inc.)
S MEMOREG 2 (Heraeus Kulzer, Inc.)	S PRESIDENT SYSTEM 360 HEAVY BODY (Coltene / Wha
S MEMOREG CD (Kulzer Inc., USA)	S PRESIDENT SYSTEM 75 HB (Coltene / Whaledent, Inc.)
S MEMOSIL 2 (Heraeus Kulzer, Inc.)	S PROVIL NOVO LIGHT (Heraeus Kulzer, Inc.)
S MEMOSIL CD (Kulzer Inc., USA)	S PROVIL NOVO LIGHT CD (Heraeus Kulzer, Inc.)
S MILLENIUM ALGIN (LASCOD S.p.A.)	S PROVIL NOVO MEDIUM FAST (Heraeus Kulzer, Inc.)
S MIRROR 3 EXTRUDE (Kerr Corporation)	S PROVIL NOVO MEDIUM REGULAR (Heraeus Kulzer, Inc
S MOLDASIL (Heraeus Kulzer, Inc.)	S PROVIL NOVO MONOPHASE (Heraeus Kulzer, Inc.)

Clifford Consulting & Research Inc.

Robert A. Nash, MD, Director
Walter J. Clifford M.S., President & General Manager

4775 Centennial Blvd. Suite 112
Colorado Springs, CO 80919-3309 USA
Tel: 719-550-0008
Fax 719-550-0009

NPI 1316110588
CLIA 06D0669295

CLIFFORD MATERIALS REACTIVITY TESTING

REPORT

DENTAL - STANDARD

Patient Information

Patient Name: Sample Patient
CCR Ref No: 57345
Date Received: 22 Sep 2015
Date Reported: 22 Sep 2015

Testing Completed By: WJC

Ordering Professional

Dr. Test Doctor100
Test Address Line 1
Test Address Line 2
Test City, CO 12345
1234567890

Reactive Components

The following chemical groups and families of compounds were observed to show reactivity in this patient. Restorative products containing these groups in dissociable, ionizable, separable or volatile form MAY NOT BE SUITABLE for this patient, or may require concurrent body burden reduction and / or risk management, if used.

Clifford Consulting & Research Inc.

CMRT Dental - Categorical Listing

S = May be suited (no contraindications seen)
NS = Not well suited (contraindicating reaction(s) seen)

Patient: Sample Patient
Date Tested: September 22, 2015
CCR No.: 57345

Composite / Acrylics / Repairs

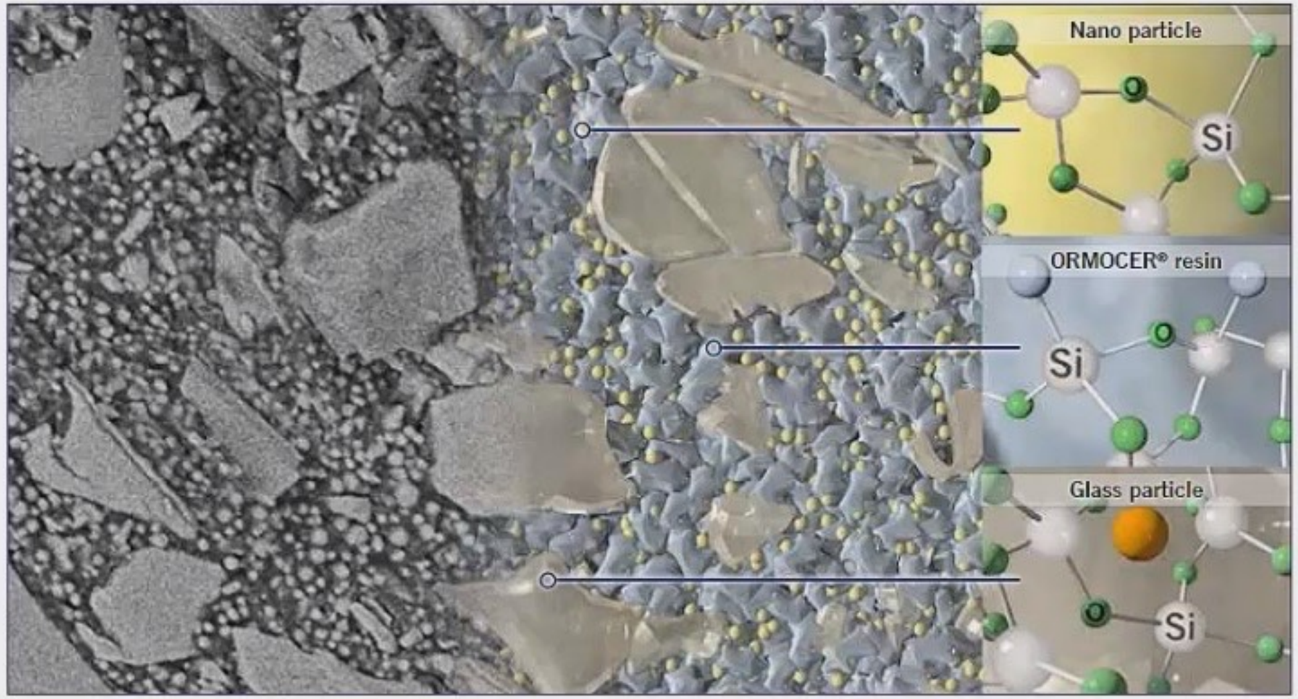
S 3D-DIRECT (Vident USA)
S 4 SEASONS (Ivoclar-Vivadent-Williams)
S A.S.A.P. FLOW (New Wave Dental, Inc.)
S ABSOLUTE DENTIN (Parkell Products, Inc.)
S ACCESS TEMP CROWN (Centrix, Inc.)
S ACCLAIM S/C COMPOSITE (Dent Zar Co.)
S ACCOLADE (Danville Materials LLC)
S ACCOLADE PV (Danville Materials LLC)
S ACCOLADE SRO (Danville Materials LLC)
S ACCUTEMP C&B TEMPORARY (AccuBite Dental Supply
S ACORN NANO-MICRO HYBRID (Dent Zar Co.)
S ACTIVA BIOACTIVE RESTORATIVE (Pulpdent Corp. Of A
S ADAPTIC ANTERIOR (Johnson & Johnson)
S ADAPTIC FAST SET (Johnson & Johnson)
S ADAPTIC II (Johnson & Johnson)
S ADJUST LC FLOWABLE (Cosmedent, Inc.)
S ADMIRA (VOCO Gmbh)
S ADMIRA CAP (VOCO Gmbh)
S ADMIRA FLOW (VOCO Gmbh)
S ADMIRA FUSION (VOCO Gmbh)
S ADMIRA PROTECT (VOCO Gmbh)
S ADVANCE (Dentsply / Caulk)
S AEGIS V (Harry J. Bosworth Co.)
S AELITE (Bisco, Inc.)
S AELITE AESTHETIC ENAMEL (Bisco, Inc.)
S AELITE ALL PURPOSE BODY HYBRID (Bisco, Inc.)
S AELITE LS (Bisco, Inc.)
S AELITE LS PACKABLE DENTIN (Bisco, Inc.)
S AELITE LS PACKABLE ENAMEL (Bisco, Inc.)
S AELITE LS POSTERIOR (Bisco, Inc.)
S AXCEL (TDI - Tri Dental Innovators)
S AXCEL FLOW (TDI - Tri Dental Innovators)
S AXCEL PACKABLE (TDI - Tri Dental Innovators)
S BARRIER DENTIN SEALANT (WaterPik Technologies, In
S BEAUTIFUL (Shofu Dental Corp.)
S BEAUTIFUL FLOW (Shofu Dental Corp.)
S BEAUTIFUL FLOW PLUS (Shofu Dental Corp.)
S BEAUTIFUL II (Shofu Dental Corp.)
S BELLEGLASS (Kerr / Sybron)
S BELLEGLASS HP (Kerr / Sybron)
S BELLEGLASS NG (Kerr / Sybron)
S BETAQUARTZ CERAMIC (Lee Pharmaceuticals)
S BEYOND DUAL-CURE TEMP CROWN & BRIDGE (TRI-B
S BEYOND TEMP C&B MATERIAL (TRI-BITE Dental, Inc.)
S BIO-CAP (Den-Mat Corporation)
S BIOCOMP FIBREFLEX (BioComp Industries)
S BIOCRYL STANDARD (Great Lakes Orthodontics, Ltd.)
S BIODENT C&B (Dentsply / DeguDent)
S BIO-TEMPS (Glidewell Laboratories)
S BIS-CORE DUAL CURE (Bisco, Inc.)
S BISCOVER LIQUID POLISH (Bisco, Inc.)
S BISCOVER LV GLAZE (Bisco, Inc.)
S BISFIL 1 (Bisco, Inc.)
S BISFIL 2B (Bisco, Inc.)
S BISFIL II (Bisco, Inc.)
S BISFIL M (Bisco, Inc.)
S BISFIL P (Bisco, Inc.)
S BISFIL-CORE L/C (Bisco, Inc.)
S BLUE CORE BUILD-UP (Teledyne - Getz)
S BRIGHT LITE FLOW (DMP Ltd. (USA))
S BRIGHT LITE MICROHYBRID (DMP Ltd. (USA))
S CLEARFIL MAJESTY 2 PREMIUM (Kuraray America, Inc.
S CLEARFIL MAJESTY ES-2 (Kuraray America, Inc.)
S CLEARFIL MAJESTY ESTHETIC (Kuraray America, Inc.)
S CLEARFIL MAJESTY ESTHETIC PLT (Kuraray America, I
S CLEARFIL MAJESTY FLOW (Kuraray America, Inc.)
S CLEARFIL MAJESTY POSTERIOR (Kuraray America, Inc
S CLEARFIL PHOTOCORE (Kuraray America, Inc.)
S CLEARFIL PHOTOCORE PLT (Kuraray America, Inc.)
S CLEARFIL PHOTOCURE (Kuraray America, Inc.)
S CLEARFIL ST OPAQUER (Kuraray America, Inc.)
S CLIP (VOCO Gmbh)
S CLIP F (VOCO Gmbh)
S CMF PRIMER (Saremco AG)
S COE-CURE (GC America Inc.)
S COLDPAC TOOTH ACRYLIC (Yates & Bird/ Motloid)
S COLOR COTE (Ivoclar-Vivadent-Williams)
S COLTOSOL F (Coltene / Whaledent, Inc.)
S COLTOSOL TEMP (Coltene / Whaledent, Inc.)
S COMMAND ULTRAFINE (Kerr / Sybron)
S COMP NATUR (VOCO Gmbh)
S COMPCORE AF DUAL CURE (Premier Dental Products, I
S COMPCORE AF FLOW (3M / ESPE)
S COMPCORE AF STACK (Premier Dental Products, Inc.)
S COMPGUARD (Den-Mat Corporation)
S COMPLUS LC (Parkell Products, Inc.)
S COMPOGLASS F (Ivoclar-Vivadent-Williams)
S COMPOGLASS FLOW (Ivoclar-Vivadent-Williams)
S COMPOGLASS SCA (Ivoclar-Vivadent-Williams)
S COMPOLITE II SUPERDENT (Darby Dental Supply Co., I
S COMPOLITE SUPERDENT (Darby Dental Supply Co., Inc
S COMPONEER CLASS V COMPOSITE SHELL (Coltene /

Silicon Oxide

Chemical base for Admira Fusion

- Nano fillers
- Glass ceramic fillers
- ORMOCER resin matrix

TEM - magnified 20,000 times



Left image: TEM view of Admira Fusion, magnified 20,000 times; Source: Prof. Dr.-Ing. Detlef Behrend, University of Rostock
Right image: schematic drawing of the TEM image, including commentary

Admira Fusion

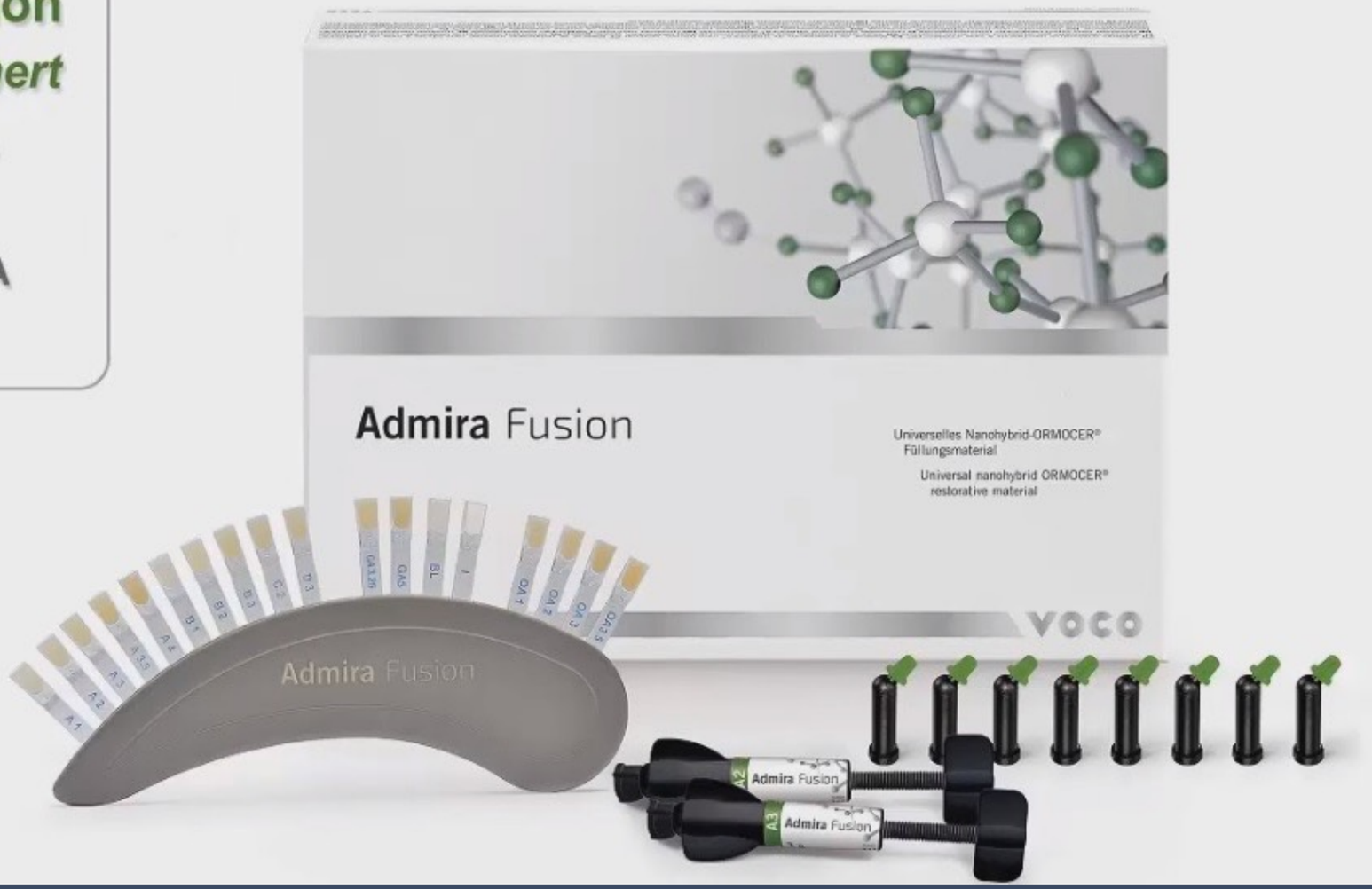
Offers significant benefits

- Unusually high degree of biocompatibility
- Fillers and matrix are based purely on silicon oxide
- Does not contain any classic monomers

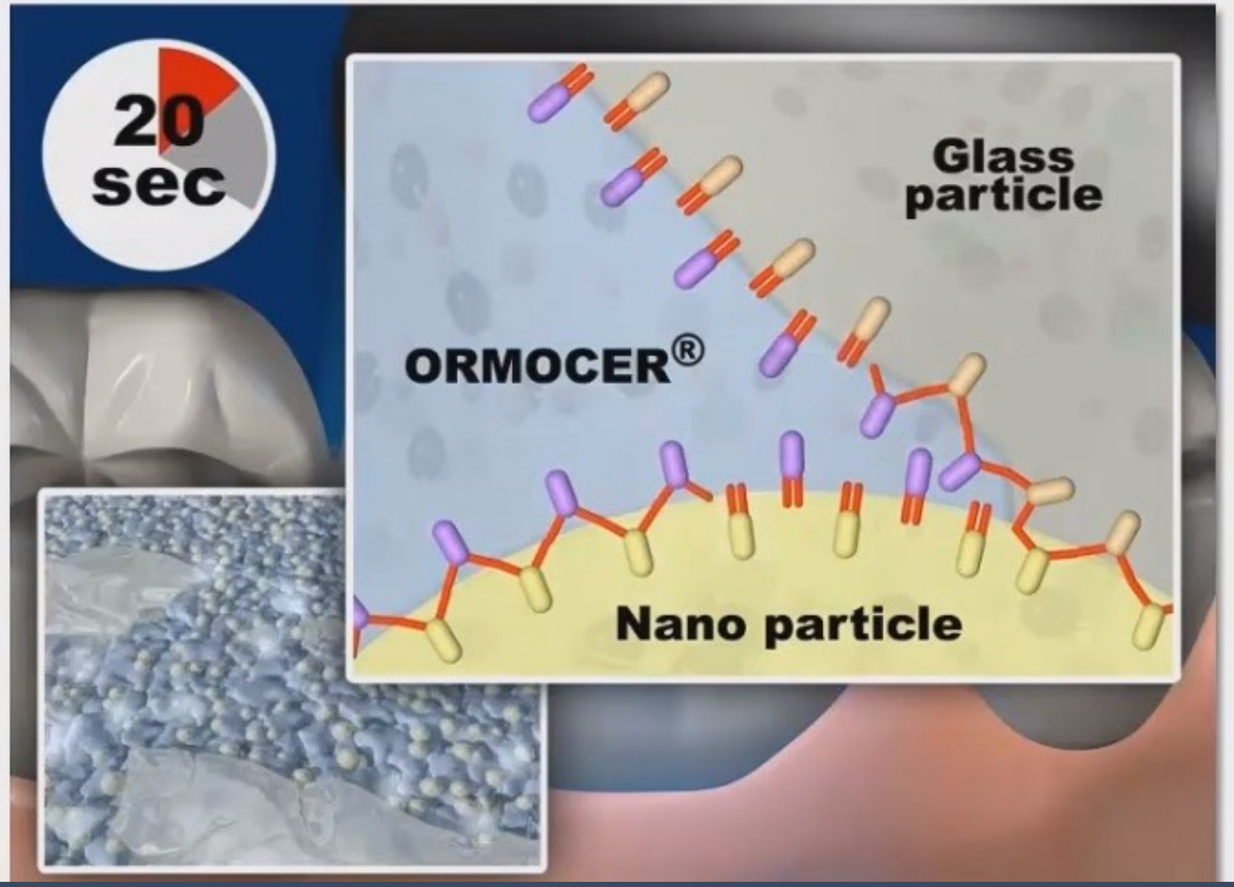
Admira Fusion

Completely inert

- No BISGMA
- No BPA
- No TEGDMA
- No UDMA



Admira Fusion's biocompatibility is further enhanced by the material's special chemical structure and high degree of cross-linking.




The science behind Admira Fusion nano-ORMOCER
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voco
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The science behind Admira Fusion nano-ORMOCER
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The science behind Admira Fusion nano-ORMOCER
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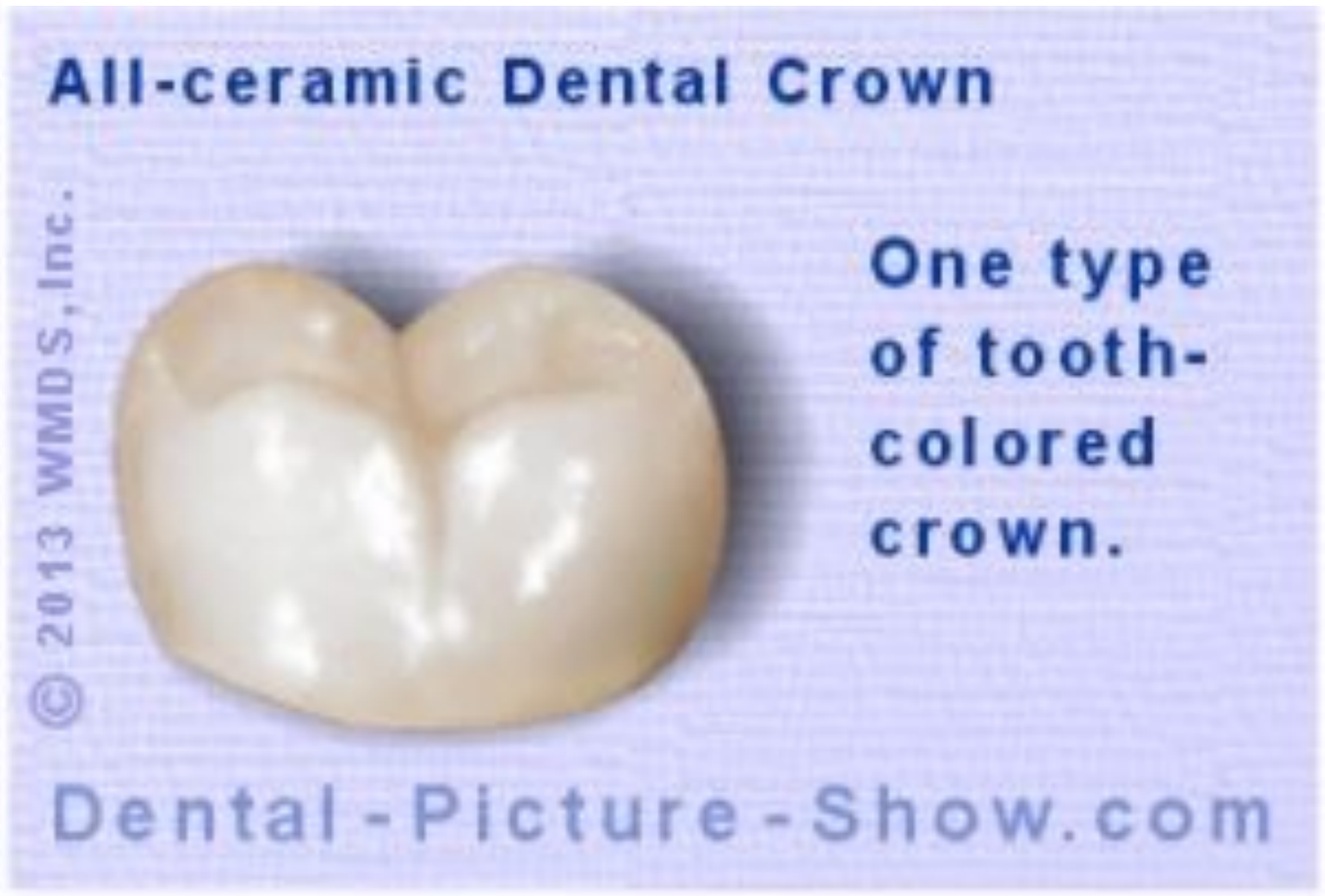
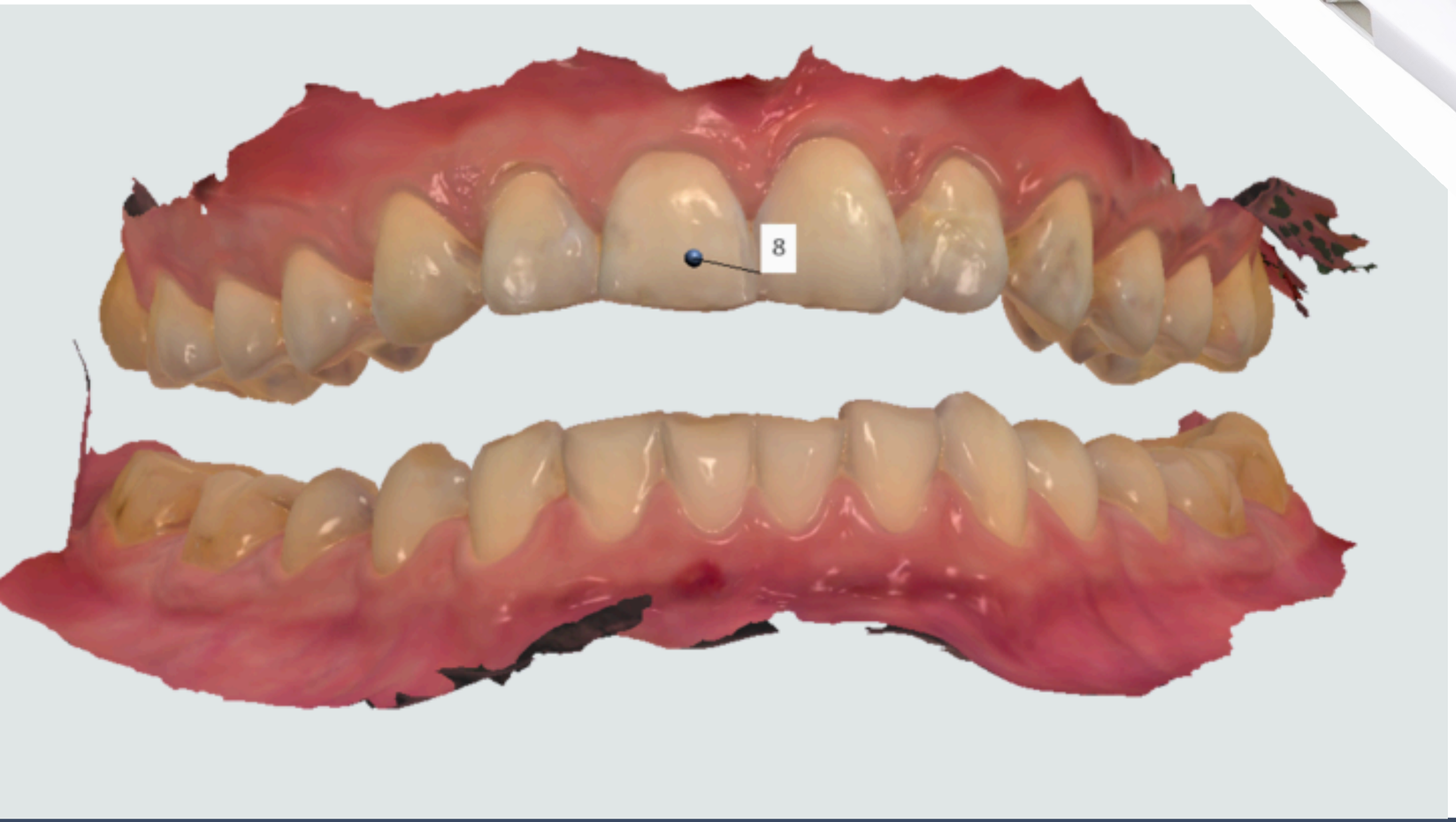
Crown types

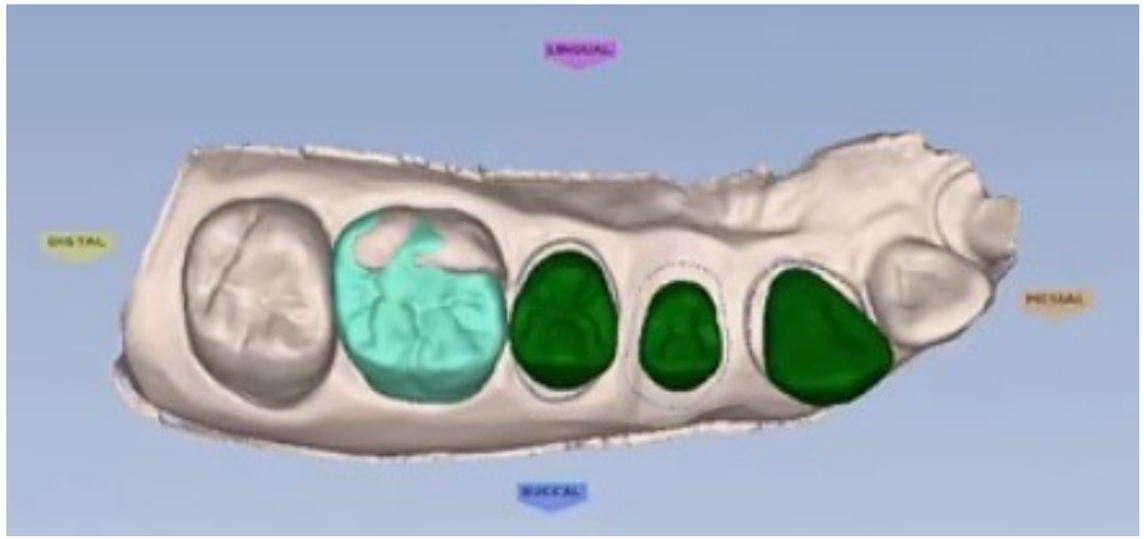

PFM Crown
Porcelain Surface
Metal Substructure
© 2013 WMDS, Inc.
Dental-Picture-Show.com


All-ceramic Dental Crown
One type of tooth-colored crown.
© 2013 WMDS, Inc.
Dental-Picture-Show.com

CAD-CAM Technology

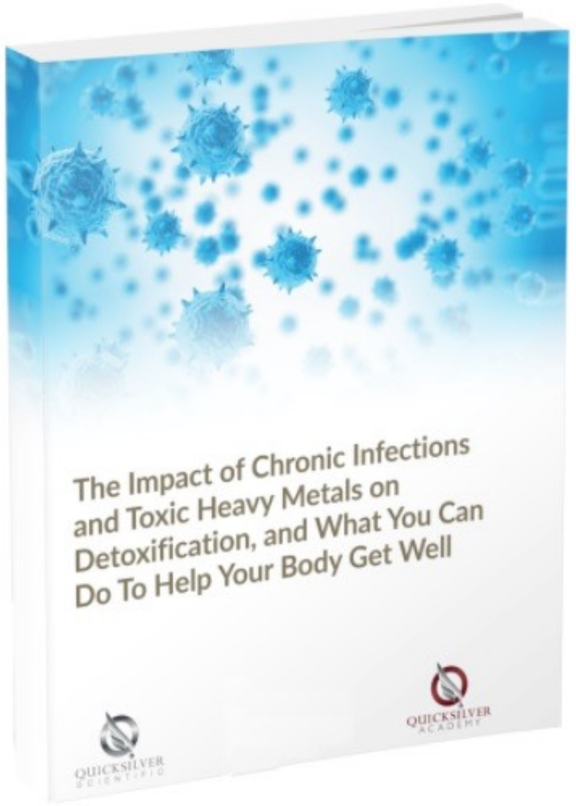


Ceramic crowns



Hg Detox—The Gray Area—so many opinions

- Elimination/reduction of exposure
  - Body burden assessment: Quicksilver Tri-test
- Biological support
  - Vegetables/fruits/supplements
- Detox
  - Blind, guessing or theoretical
  - Functional as determined by appropriate testing
    - Genetic—SNPs
    - Methylation panel
    - Push-Catch System: http://www.townsendletter.com/FebMarch2018/pushcatch0218.html



The Impact of Chronic Infections and Toxic Heavy Metals on Detoxification

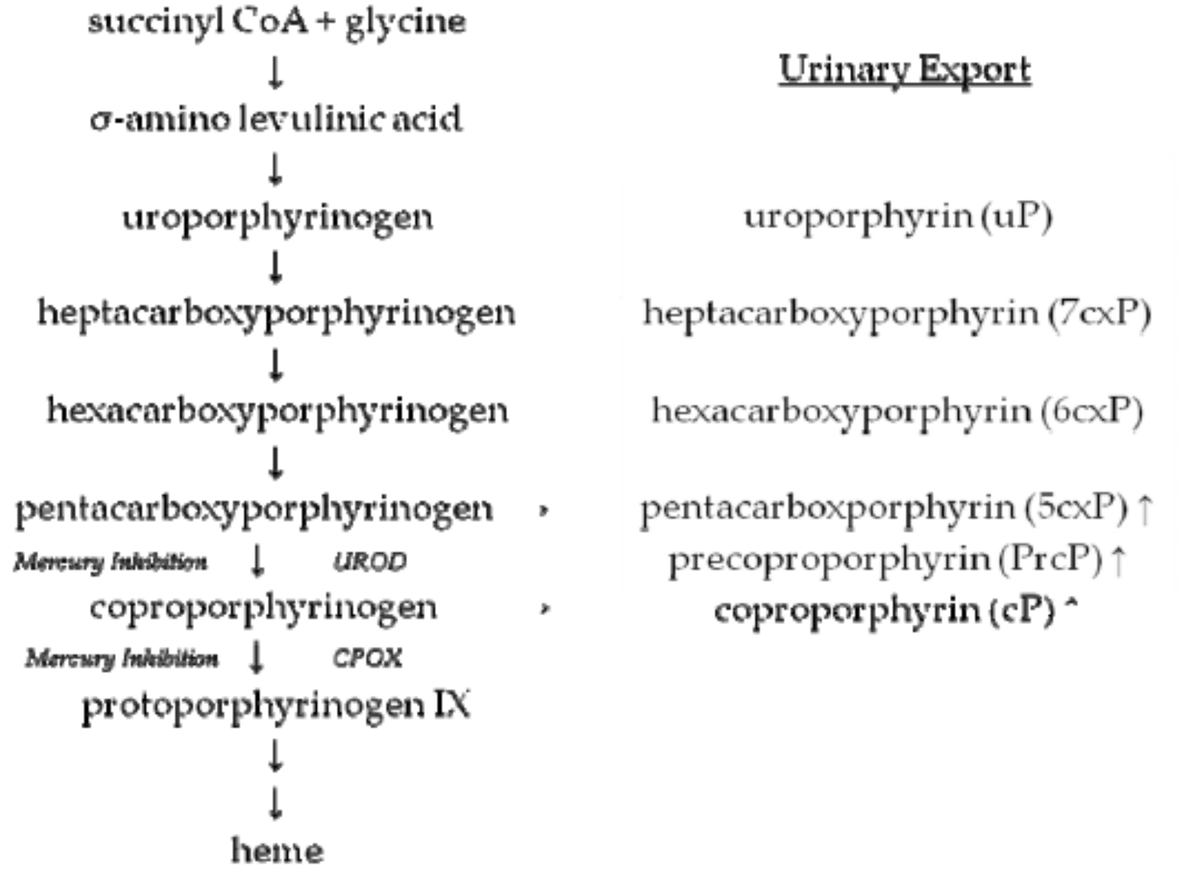
If you've experienced a health condition without a known cause that has left you with vague and troubling symptoms of chronic fatigue, pain, difficulty thinking, headaches, or general malaise, you are not alone.

The cause of many of these chronic health conditions is often elusive, but that does not mean it does not exist. Chronic infections, environmental toxin exposures, and heavy metal toxicity each can have a deleterious and cumulative effect on our health, yet many individuals aren't aware of their impact.

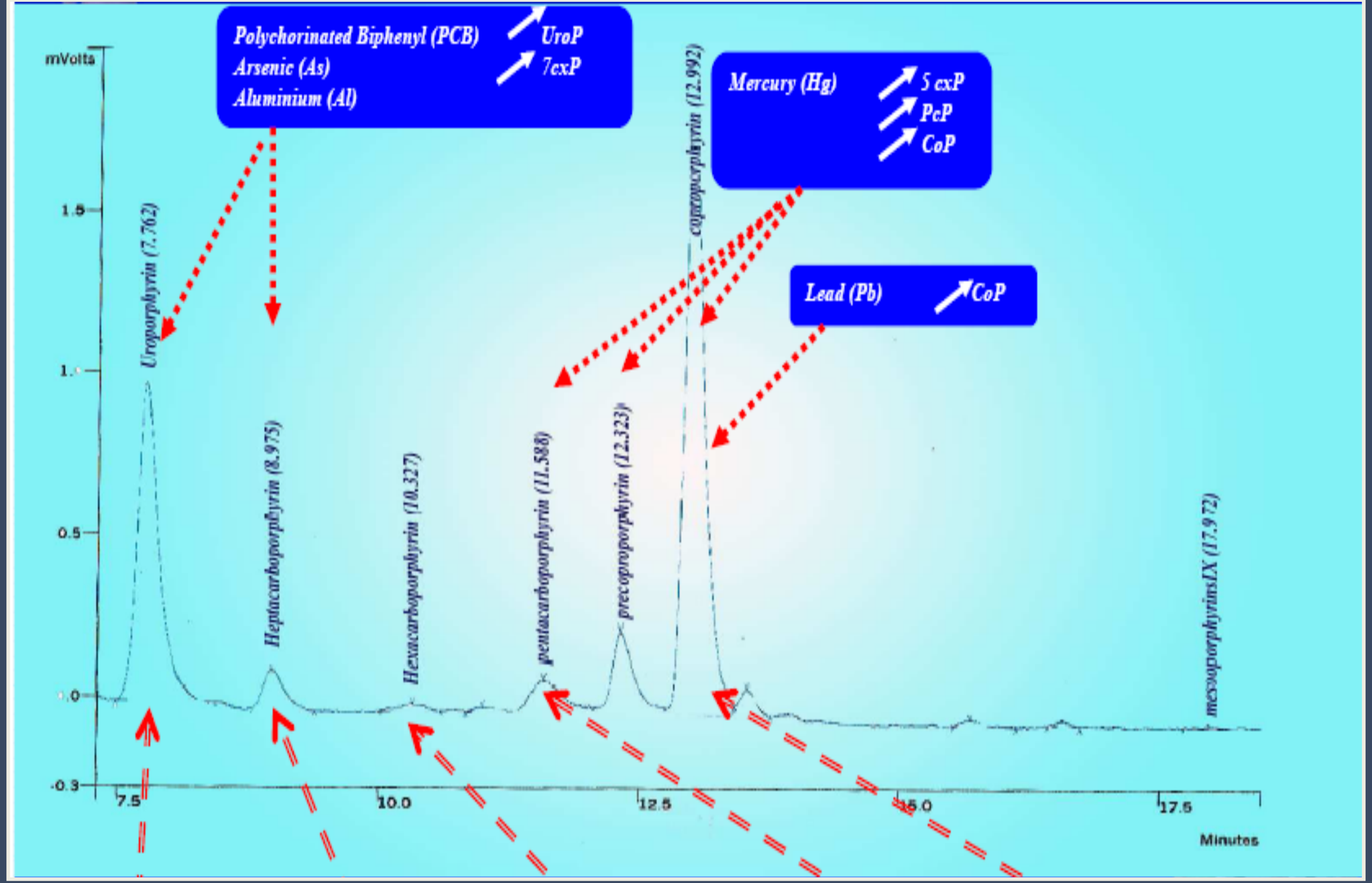
DOWNLOAD THE eBOOK

https://quicksilverscientific.clickfunnels.com/holistic-oral-health-summit-qs?utm_source=email&utm_campaign=holistic%20oral%20health%20summit%20emails

Figure 1. A summary of the heme synthesis pathway and associated urinary porphyrins



A summary of the heme synthesis pathway and major urinary metabolites. Porphyrinogens appear in urine as porphyrin derivatives (right). Mercury can cause increased urinary 5cxP, PrcP, and cP by inhibiting uroporphyrinogen decarboxylase (UROD) and/or coproporphyrinogen oxidase (CPOX); urinary uP is not reported to alter with inhibition of these enzymatic steps.



ACS APPLIED MATERIALS & INTERFACES

Research Article

www.acsami.org

http://www.pdxpharm.com/wp-content/uploads/2015/10/am5007707.pdf

Novel Oral Detoxification of Mercury, Cadmium, And Lead with Thiol-Modified Nanoporous Silica

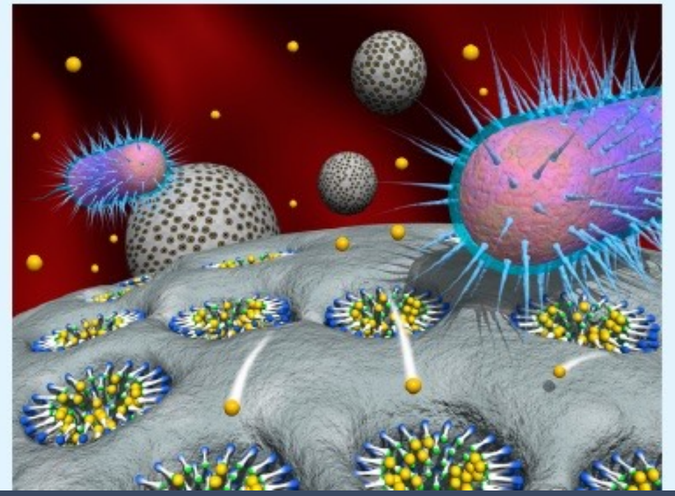
Thanapon Sangvanich,[†,‡] Jingga Morry,[†,‡] Cade Fox,[†] Worapol Ngamcherdtrakul,[†] Shaun Goodyear,[†] David Castro,[†] Glen E. Fryxell,[§] Raymond S. Addleman,[§] Anne O. Summers,[⊥] and Wassana Yantasee*[,†]

[†]Department of Biomedical Engineering, Oregon Health & Science University (OHSU), Portland, Oregon, United States

[§]Pacific Northwest National Laboratory (PNNL), Richland, Washington, United States

[⊥]Department of Microbiology, University of Georgia, Athens, Georgia, United States

ABSTRACT: We have developed a thiol-modified nanoporous silica material (SH-SAMMS) as an oral therapy for the prevention and treatment of heavy metal poisoning. SH-SAMMS has been reported to be highly efficient at capturing heavy metals in biological fluids and water. Herein, SH-SAMMS was examined for efficacy and safety in both in vitro and in vivo animal models for the oral detoxification of heavy metals. In simulated gastrointestinal fluids, SH-SAMMS had a very high affinity (K_d) for methyl mercury (MeHg(I)), inorganic mercury (Hg(II)), lead (Pb(II)), and cadmium (Cd(II)) and was superior to other SAMMS with carboxylic acid or phosphonic acid ligands or commercially available metal chelating sorbents. SH-SAMMS also effectively removed Hg from biologically digested fish tissue with no effect on most nutritional minerals found in fish. SH-SAMMS could hold Hg(II)

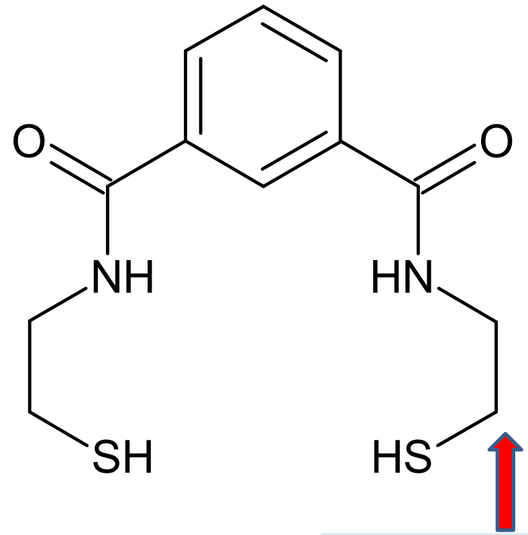


Emeramide (NBMI)Technology (Boyd Haley, PhD.)

- NBMI – N,N’-bis(2-mercaptoethyl)isophthalamide.
- Lipophilic and proven to penetrate cellular membranes, and

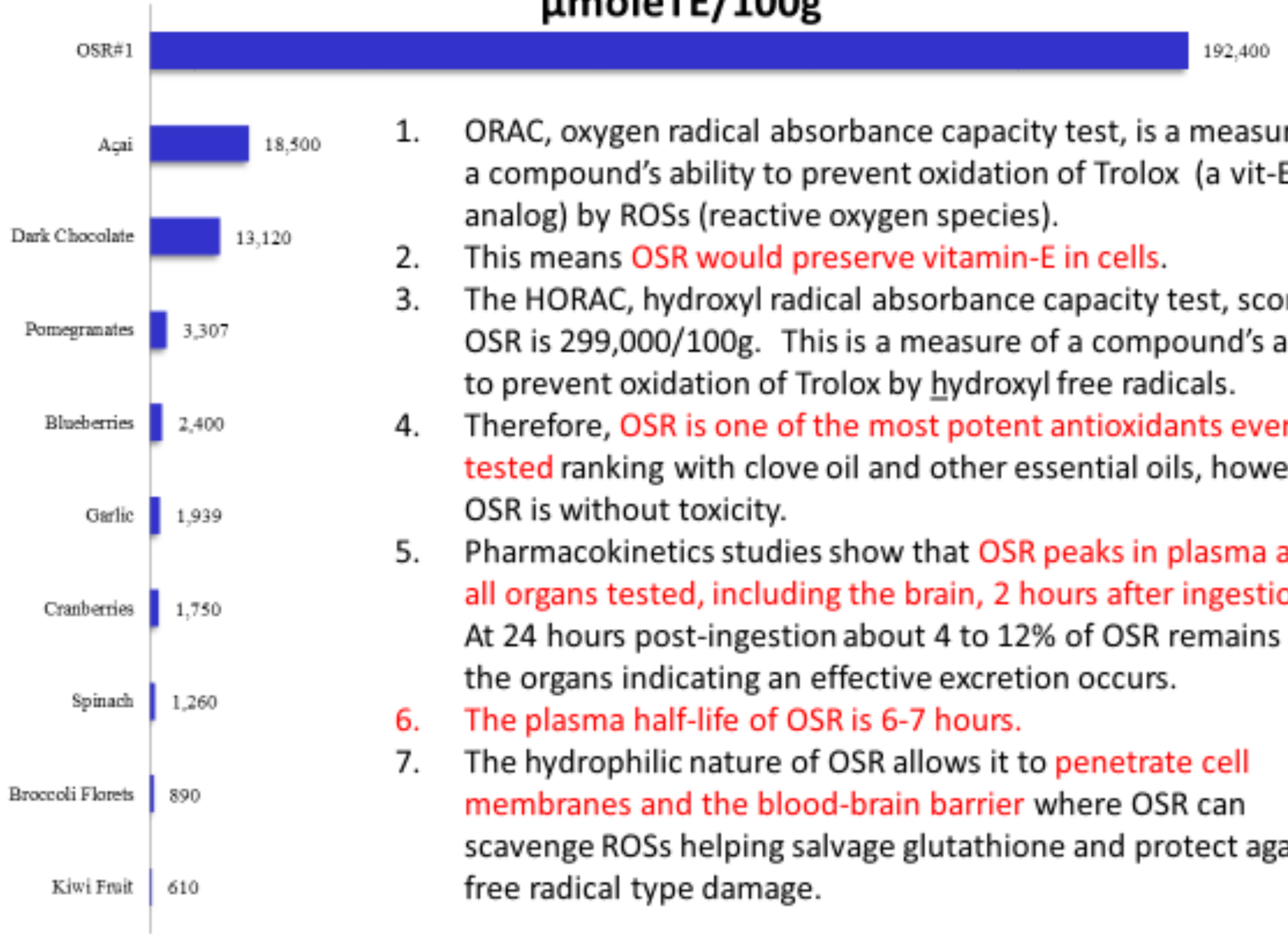
cross the blood-brain barrier (BBB) and enter the bone marrow.

- Maximum affinity for binding to mercury and other heavy metals.
- Stable at room temperature for greater than 5 years.
- Effective with oral self-administration with 40-80% absorption.
- Does not cause depletion of essential metals Cu^{2+}, Fe^{2+} and



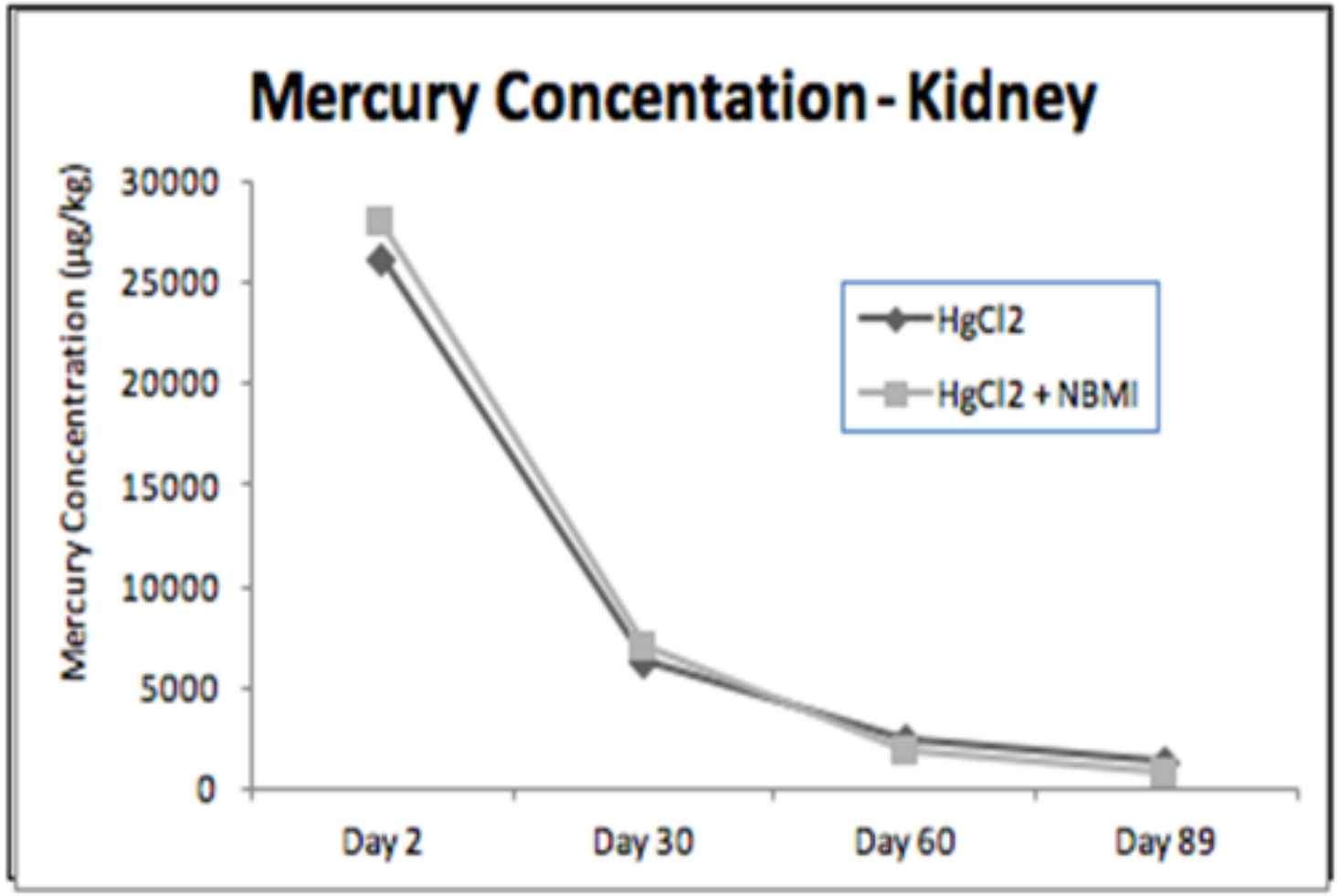
Multiple degrees of freedom of rotation. Allows binding of metals with different coordination chemistry.

Comparative ORAC Scores
µmoleTE/100g



1. ORAC, oxygen radical absorbance capacity test, is a measure of a compound's ability to prevent oxidation of Trolox (a vit-E analog) by ROSs (reactive oxygen species).
2. This means OSR would preserve vitamin-E in cells.
3. The HORAC, hydroxyl radical absorbance capacity test, score for OSR is 299,000/100g. This is a measure of a compound's ability to prevent oxidation of Trolox by hydroxyl free radicals.
4. Therefore, OSR is one of the most potent antioxidants ever tested ranking with clove oil and other essential oils, however OSR is without toxicity.
5. Pharmacokinetics studies show that OSR peaks in plasma and all organs tested, including the brain, 2 hours after ingestion. At 24 hours post-ingestion about 4 to 12% of OSR remains in the organs indicating an effective excretion occurs.
6. The plasma half-life of OSR is 6-7 hours.
7. The hydrophilic nature of OSR allows it to penetrate cell membranes and the blood-brain barrier where OSR can scavenge ROSs helping salvage glutathione and protect against free radical type damage.

13786.01.07 - N1, N3-bis(2-mercaptoethyl)isopthalamide (NBMI): Effect of a Single Subcutaneous Dose on Tissue Mercury Levels in Mercuric Chloride-Dosed Rats



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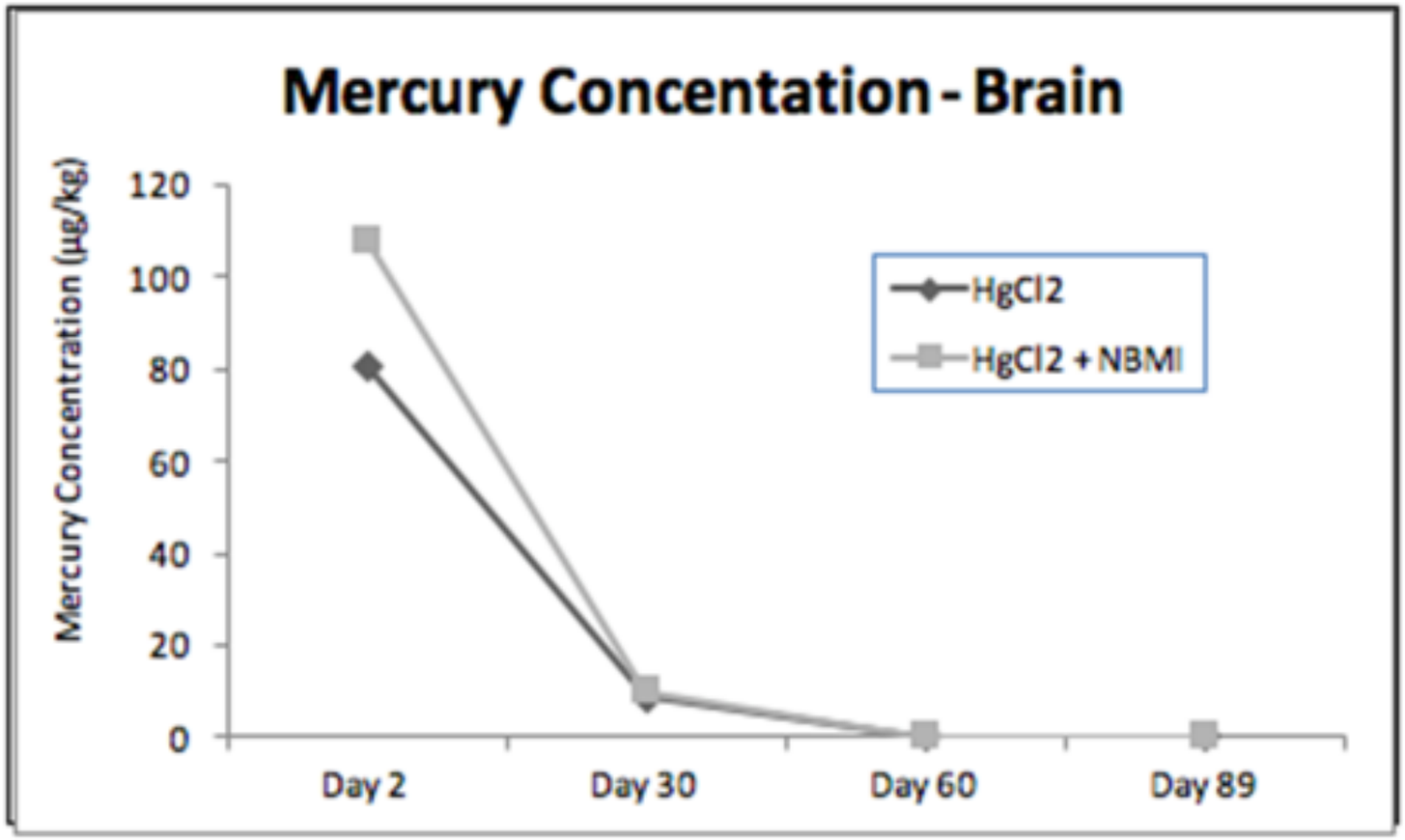


Summary slide on Emeramide (NBMI)

- NBMI binds mercury, lead, cadmium and arsenic with exceptionally high affinity.
- NBMI injected or ingested into animals can prevent the toxic effects of mercury.
- NBMI is an exceptionally effective scavenger of toxic hydroxyl free radicals produced by toxic metals and infections.
- No toxicity has been associated with long term or high dose use of NBMI in test animals.
- NBMI has been shown to increase the redox status of humans which would aid in fighting off viral diseases and preventing “leaky membranes” in test systems.

Summary slide on Emeramide (NBMI)

- NBMI has been effective at reversing the urinary porphyrin profile indicating mercury toxicity.
- NBMI taken for two months has been shown to greatly decrease the urinary mercury levels seen on “chelation challenge tests” by other chelators indicating effective lowering of mercury body burden.
- NBMI can cross the blood brain barrier and decrease the oxidative stress caused by free iron. It binds free iron in the whole body as NBMI enters all cells of all tissues tested to date.
- The efficaciousness of NBMI as a chelator/antioxidant is supported by both laboratory, clinical and animal testing.

“I don’t know what your destiny will be, but this I do know, those who will be truly happy will be those who sought and found how to serve others.”

Dr. Albert Schweitzer

		Results mcg/g creatinine	QUINTILE DISTRIBUTION 1st 2nd 3rd 4th 5th	95% Reference Range
Porphyrin Pathway Intermediates				
1.	Uroporphyrin I & III	21.4	16.6	<= 22.1
2.	Heptacarboxyporphyrin	8.0	5.9	<= 9.5
3.	Hexacarboxyporphyrin	<DL		<= 3.3
4.	Pentacarboxyporphyrin	<DL	2.3	<= 3.9
5.	Precoproporphyrin*	7.5	7.5	<= 11.9
6.	Coproporphyrin I	27	33	<= 46
7.	Coproporphyrin III	88	89	<= 136
Calculated Values				
8.	Total Porphyrins	144	143	<= 203
9.	Precopro/Uro I & III	0.35	0.64	<= 0.96
10.	Copro I/Copro III	0.31	0.53	<= 0.76

Creatinine = 61 mg/dL

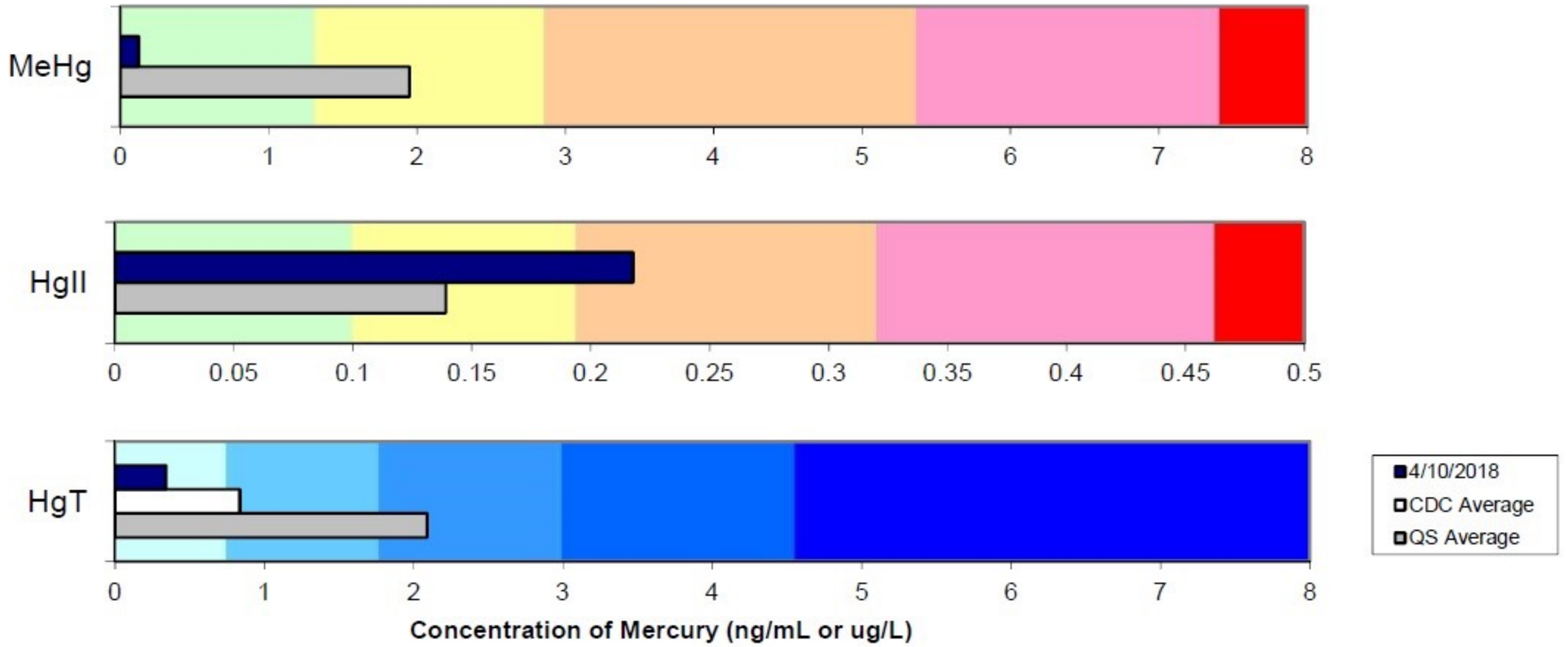
QUICKSILVER SCIENTIFIC

G R

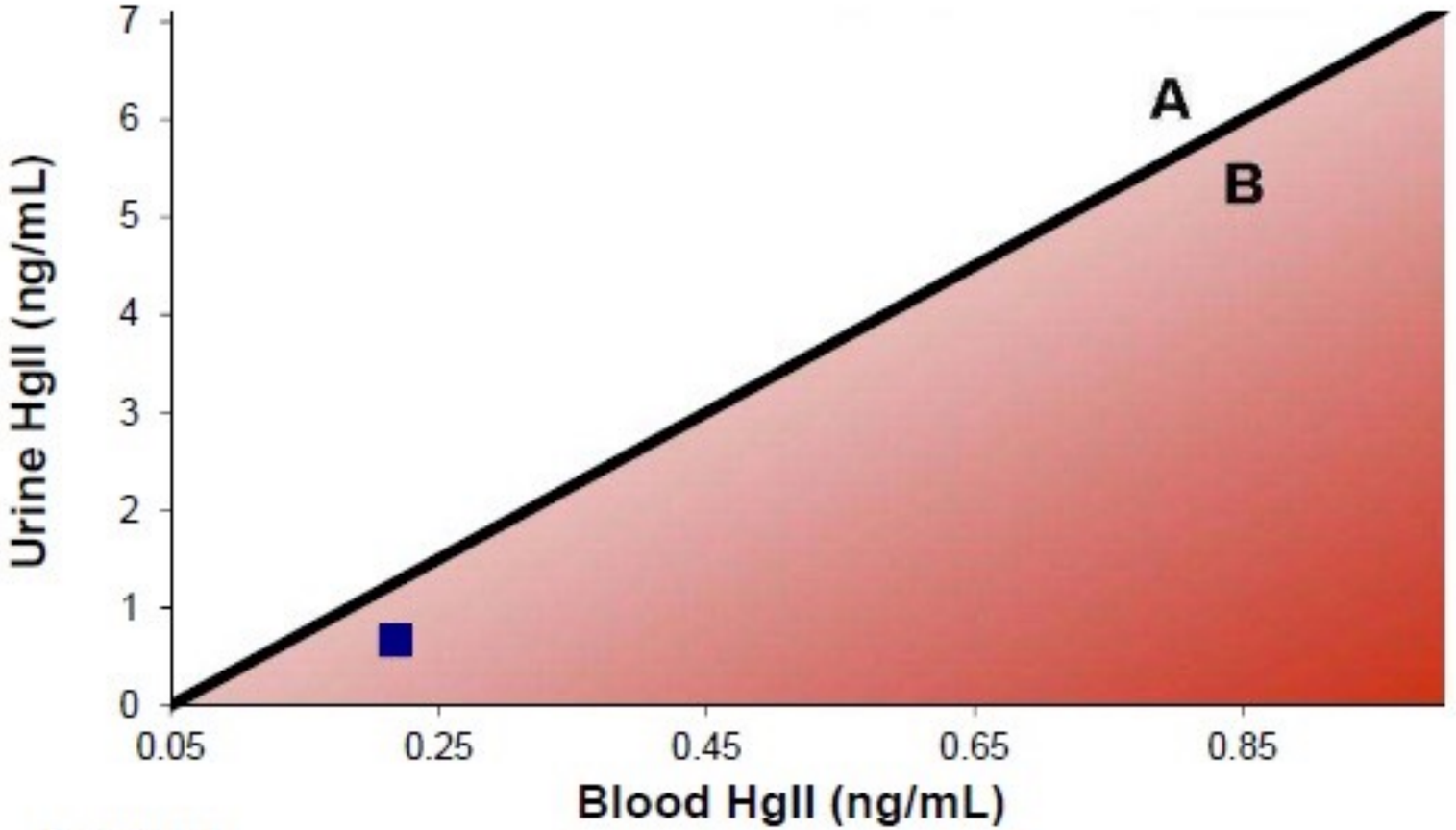
		Dates	Taken	Arrived	Analyzed
Physician Name	Jack Kall		4/10/2018	4/12/2018	4/17/2018
Date Of Birth	[redacted]/1947		NA	NA	NA

Blood Results

Blood Mercury Comparison



Indication of Inorganic Mercury Excretion Ability

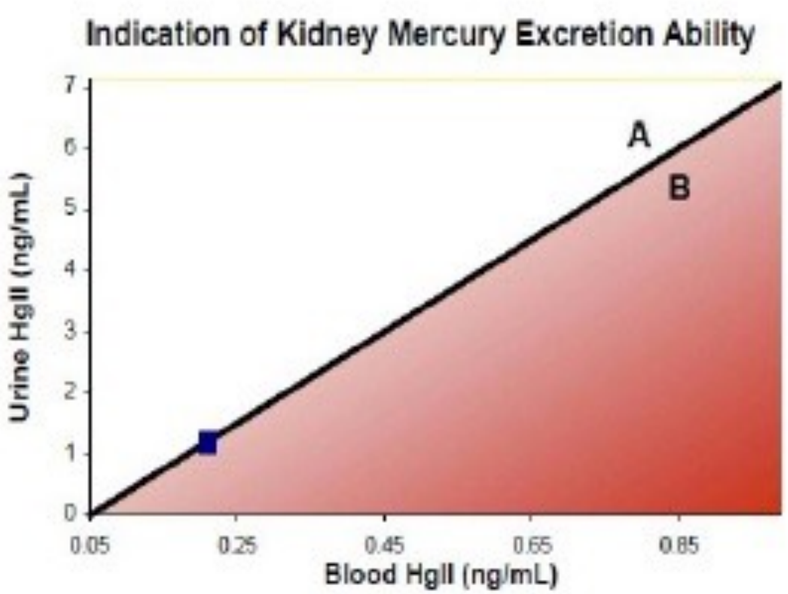


Legend

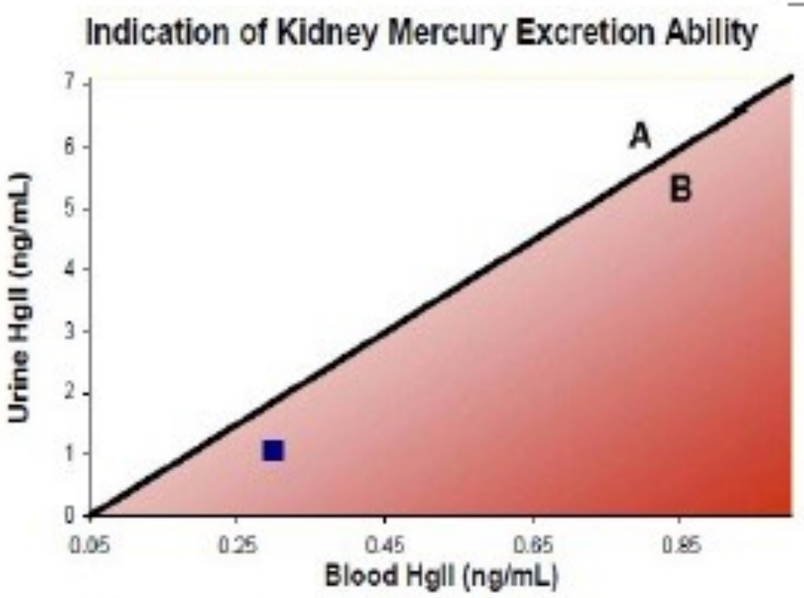
A) Average Excretion: Mercury output is average or above average when at a ratio of at least 375:1 HgT in hair to MeHg in blood and 6.9:1 HgT in urine to HgII in blood.

B) Below Average Excretion: Mercury output is below average when the tissue Hg comparisons are below ratios mentioned above (red area)

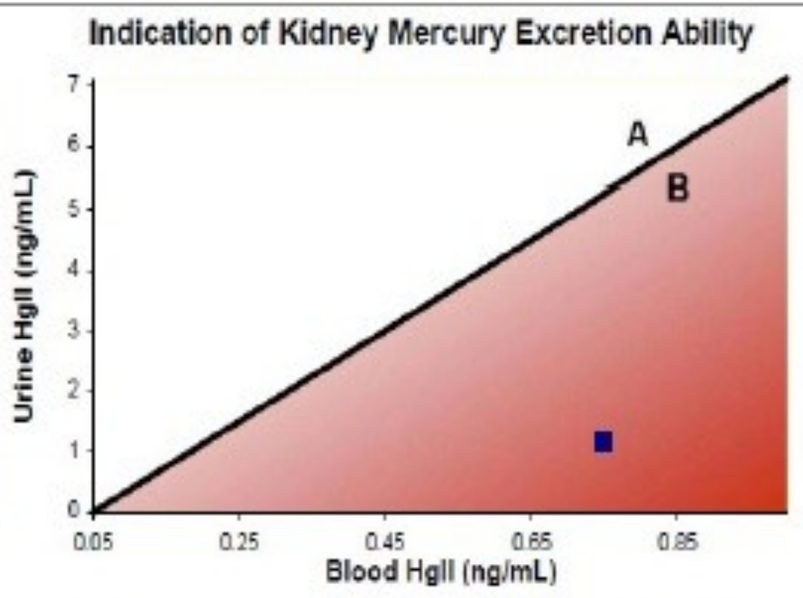
Interpretation of Ratios is Generally The same for both urine and Hair, except that Hair:Blood ratio is allowed a bit more flexibility (deviation from the line) due to timing of hair emergence



Good Ratio



Slightly Depressed Ratio



Strongly Depressed Ratio