Technology Corporation
Responsible for Product Research and Analysis (Confidential)

PRODUCT DATA SHEET

NM-Ca *Winston Clinoptilolite
Potassium Aluminosilicate, Natural Clinoptilolite

Zeolite Powder and Granules

TYPICAL PROPERTIES

Form	Granules & Powders
Color	White (85 optical reflectance)
Pore Diameter	4.0 Angstroms
Pore Volume	15%
Specific Surface Area	15 m^2/g
Surface Charge Density	10.1 E-23 meq/A^2
Bulk Density (granules & powders)	44 - 53 lbs/ft^3 1,603 kg/m^3
pH Stability	3 - 10
Swelling Index	nil
Thermal Stability	1,202°F 650°C
Ion Exchange Capacity	0.8 – 1.2 meq/g

TYPICAL CHEMICAL ANALYSIS

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na_2O	K_2O	P_2O_5
64.9	11.9	1.6	3.4	1.4	0.3	3.2	>0.05

MAJOR EXCHANGEABLE CATIONS

Rb^+	Na^+	Ba^{+2}	Mg^{+2}	Li^+	Ag^+	Sr^{+2}	Fe^{+3}	K^+	Cd^{+2}
Cu^{+2}	Co^{+3}	Cs^+	Pb^{+2}	Ca^{+2}	Al^{+3}	NH^{+4}	Zn^{+2}	Hg^{+2}	Cr^{+3}

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PRODUCT DATA SHEET

AZLB-Na
Bowie Chabazite

Anhydrous Sodium Aluminosilicate, Natural Herschelite-Sodium Chabazite

Zeolite Powder and Granules

TYPICAL PROPERTIES

Form	Granules & Powders
Color	Reddish / Tan (dry brightness 40)
Ring Members	8
Crystal Size	Less than 1 micron
Crystallinity	$^{+}$90%
Density	1.73 g/cm^3
Pore Size	4.1 by 3.7 Angstroms
Effective Pore Diameter	4.3 Angstroms
Cavity Size	11.0 by 6.6 Angstroms
Total Pore Volume	.468 cm^3/g
Surface Area	520 m^2/g
Crystal Void Volume	.47 cm^3/cm^3
Packing Density	Approx. (40 - 44 lbs/ft^3)
SiO_2/Al_2O_3 Ratio	Approx. 4:1
MOH's Hardness	4 - 5
Moisture as Packaged	Less than 20% by Weight
pH of 1% Dispersion	8.5
Stability	pH of 3 through 12
Ion Exchange Capacity	2.50 meq/g
Sorption Capacity	>15 wt. % H_2O at 10% RH

PRODUCT DATA SHEET

AZLB-Na
Bowie Chabazite

TYPICAL CHEMICAL ANALYSIS (Anhydrous Basis)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na_2O	K_2O	Dominant Cation
68.1	18.59	2.84	0.27	0.75	8.32	1.12	Na

EXCHANGE SELECTIVITIES

$Tl^+ > Cs^+ > K^+ > Ag^+ > Rb^+ > NH_4^+ > Pb^{2+} > Na^+ = Ba^{2+} > Sr^{2+} > Ca^{2+} > Li^+$

EXCHANGE OF HEAVY METAL IONS

Weight Percent of Heavy Metals Retained in Anhydrous CABSORB after Ion Exchange from a .10 mg/ml solution: $AgNo_3$, $Pb(NO_3)_2$, $CoSO_4$ and a 0.025 mg/ml solution of $CuSO_4$ at the Initial pH Indicated for each Solution

Ag		Pb		Cu		Co	
pH	Wt%	pH	Wt%	pH	Wt%	pH	Wt%
5.30	21.85	3.80	15.27	3.43	3.17	2.91	2.82

RELATED MATERIALS

- Linde AW 500
- Linde Ion Sieve IE 95
- Linde Ion Sieve IE 96
- Linde D
- Linde R
- LZ 218
- MAPO 44
- MAPO 47
- Sapo 34
- TSM 300
- 2 K – 14
- 2 YT – 6
- Acadialite
- Haydenite
- Seebachite
- Willhendersonite

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Technology Corporation
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PRODUCT DATA SHEET

NV-Na *Ash Meadows Clinoptilolite
Hydrous Sodium Aluminosilicate, Natural Clinoptilolite

Zeolite Powder and Granules

TYPICAL PROPERTIES

Form	Granules & Powders
Color	Tan - Green
Pore Diameter	4.0 Angstroms
Pore Volume	15%
Specific Surface Area	40 m^2/g
Bulk	45 - 80 lbs/ft^3 760 – 1,283 kg/m^3
Solid Density	100 lbs/ft^3 1,603 kg/m^3
Alkali Stability	pH of 7 - 10
Acid Stability	Ph of 3 - 7
Thermal Stability	1,202°F 650°C
Ion Exchange Capacity	1.85 milliequivalents/g

TYPICAL CHEMICAL ANALYSIS

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na_2O	K_2O	MnO	TiO_2
69.1	11.9	0.7	0.8	0.4	3.5	3.8	0.02	0.1

MAJOR EXCHANGEABLE CATIONS

Rb^{+}	Na^{+}	Ba^{+2}	Mg^{+2}	Li^{+}	Ag^{+}	Sr^{+2}	Fe^{+3}	K^{+}	Cd^{+2}
Cu^{+2}	Co^{+3}	Cs^{+}	Pb^{+2}	Ca^{+2}	Al^{+3}	NH^{+4}	Zn^{+2}	Hg^{+2}	Cr^{+3}

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Technology Corporation
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PRODUCT DATA SHEET

AZUB
Bowie Chabazite

Hydrous Calcium Sodium Aluminosilicate, Natural Herschelite - Calcium/Sodium Chabazite

Zeolite Powder

TYPICAL PROPERTIES

Form	Powders
Color	Yellowish Tan (dry brightness 43)
Crystal Size	Less than 1 micron
Crystallinity	50 - 60%
Density	1.73 g/cm^3
Total Pore Volume	.468 cm^3/g
Surface Area	350 m^2/g
Crystal Void Volume	.47 cm^3/cm^3
Packing Density	Approx. 577 kg/m^3 (36 lbs/ft^3)
SiO_2/Al_2O_3 Ratio	Approx. 4:1
Moisture as Packaged	Less than 12% by Weight
pH of 1% Dispersion	8.5
Stability	pH of 3 through 12
CEC	1.8 MEQ/G

TYPICAL CHEMICAL ANALYSIS (Equilibrated at 20°C and 40% Relative Humidity)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na_2O	K_2O	LOI	Dominant Cation
54.6	14.9	2.28	0.22	.6	6.67	.9	19.4	Ca/Na

PRODUCT DATA SHEET

AZUB
Bowie Chabazite

PARTICLE SIZE DISTRIBUTION SURFACE AREA

D50	12 – 14 microns
D90	37 – 40 microns
Total Surface Area	350 m^2/g
External Surface Area	65 m^2/g
Average Chabazite Crystallite	.2 microns
Amorphous Silica	35 – 45%

ADVANTAGES OF SCM710 ZEOFUME

- Lightweight: Densities in the range of 1.25 – 1.1 are achievable. Densities variable through changes in water ratios.
- Strength
- Less embedded materials: 20 – 25% less material needed, compared to flayash cement mixtures.
- Cost: Project completion times greatly reduced.
- Superior Zonal Isolation: Avoids the use of packers to mechanically isolate zones.
- Reduction in waste and disposable materials.
- Shorter time on site.

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Zee Dynamics Material Safety Data Sheet

1. Product and Company Identification

Trade name: Zee Products
Manufacturer: Zee Dynamics Inc. 408-866-1220
1649 Luika Place 408-460-2968 cell
Campbell, Ca 95008 408-866-1220Fax
www.zeedynamics.com Revised: January 20,2010

2. Composition/In Information on Ingredients
   Composition: 95% natural zeolite **Certified**
   Common names: Clinoptilolite, clino, **inorganic zeolite,** Hydrated sodium potassium calcium aluminosilicates
   Empirical formula: Cs+>Rb+>K+>Ca+2>NH_4+>Sr+>Na+>1.1+NH_4+>>Na+
   CAS Registry No.: 1218-0072
3. Hazards Identification
   Contains less than 0.1% crystalline silica.
4. First Aid Measures
   Skin and Eye Contact: Flush with water.
   Inhalation: Move to dust free air. Administer oxygen and CPR if breathing stops.
   Ingestion: Drink 16 ounces (500 ml) of water.
5. Fire Fighting Measures
   Flash point: None Flammable limits: None
   Not a fire or explosion hazard; EcoSand may be used in place of sand to extinguish Class A and B fires.
6. Accidental Release Measure
   Wear dust protection. Sweep or scoop up and dispose in non-hazardous waste.
7. Handling and Storage
   Handle in a way to minimize dust. Store at ambient temperature.
8. Exposure Controls/Personal Protection
   Wear dust mask or safety glasses to prevent nuisance dust from entering nose, mouth and eyes.
9. Physical and Chemical Properties
   Appearance: Gray green solid Odor: None
   Sp. gr. (water=1): 0.85 Melting point (°C): > 1,200
10. Stability and Reactivity
    Stability: Stable Incompatibility: None
    Hazardous polymerization: None
11. Toxicological Information
    OSHA: Free silica is not listed as a carcinogen.
12. Ecological Information
    Waterfowl Toxicity: Not applicable Aquatic toxicity: Not applicable
    Food chain concentration: Not applicable Biochemical oxygen demand: Not applicable
    Atmospheric: Not applicable

13. Disposal Considerations
    Natural zeolites are not classified as hazardous under RCRA.
14. Transport Information
    Natural zeolites are not classified as hazardous material by the US DOT.
15. Regulatory Information
    CLERCLA: Not classified as a hazardous substance.
16. Other Information
    None
    Disclaimer: Although reasonable care was taken in preparing this document, no warranties are extended, no representations are made as to the accuracy or completeness of the information contained in this document, and no responsibility is assumed regarding the suitability of this information for the user's intended purposed or the consequences of its use. Each individual should make a determination as to suitability of the information for their particular purpose(s).

MATERIAL SAFETY DATA SHEET

An explanation of terms used may be found in OSHA, 29 CFR 191.1200 available from OSHA regional or area offices.

July 20,95

1. PRODUCT IDENTIFICATION

PRODUCT: STONE HOUSE - Natural Zeolite **CAS No.** 1318-02-1

CHEMICAL NAME: Potassium-calcium-sodium-aluminosilicate | **SYNONYMS:** Clinoptilolite

EMPIRICAL FORMULA: (K,Ca,Na) 2O-AL2O3-10SiO2-6H2O | **CHEMICAL FAMILY:** Molecular Sieve

2. COMPANY IDENTIFICATION

COMPANY NAME: Innovative Rubber & Plastics

MAILING ADDRESS: 1649 Luika Place Campbell, CA 95008

PHYSICAL ADDRESS: Same

PHONE NUMBER: 408-866-1220 | email: mindy-john@sbcglobal.net

3. HEALTH HAZARD DATA

HAZARDOUS INGREDIENTS: May Contain 0.07-0.10% Free Silica. | **ROUTES OF ENTRY:** Inhalation

HEALTH HAZARDS: (Acute & Chronic) Prolonged exposure to respirable silica may cause health risks.

SIGNS & SYMPTOMS OF EXPOSURE: None

4. FIRST AID MEASURES

SWALLOWING: If ingested in large quantities, contact physician for permission to induce vomiting.

SKIN CONTACT: None | **INHALATION:** Remove the person to fresh air.

EYE CONTACT: Immediately flush eyes with water for 15 minutes.

NOTES TO PHYSICIAN: If this product has been treated with a material of a hazardous nature, identify material and treat accordingly.

5. PHYSICAL & CHEMICAL CHARACTERISTICS

COLOR:	White	**BOILING POINT:**	Not applicable
ODOR:	None	**FREEZING POINT:**	Not applicable
MELTING POINT:	1800 F	**VAPOR PRESSURE:**	Not applicable
VAPOR DENSITY:	Not applicable	**SPECIFIC GRAVITY:**	1.5 - 1.7
SOLUBILITY IN WATER:	0	**EVAPORATION RATE:**	Not applicable

6. FIRE AND EXPLOSION DATA

FLASH POINT:	Not applicable	**FLAMMABLE LIMITS:**	Not applicable
LEL:	Not applicable	**UEL:**	Not applicable

EXTINGUISHING MEDIA: Not applicable

SPECIAL FIRE FIGHTING PROCEDURES: Non combustible

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

7. REACTIVITY DATA

STABILITY:	Stable	**CONDITIONS TO AVOID:**	Not applicable
INCOMPATIBILITY (Materials to avoid):	None		
HAZARDOUS POLYMERIZATION:	Will not occur.	**CONDITIONS TO AVOID:**	*Not applicable*

8. SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: It is recommended to ensure compliance with various state or federal regulations that any significant quantities spilled in surface waters be reported to appropriate state or federal officials.

WASTE DISPOSAL METHOD: Spills should be cleaned up in a manner that does not generate dust and disposed of in a landfill. If raw material has been treated with toxic or hazardous substances material should be disposed of accordingly.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Avoid breathing nuisance dust.

OTHER PRECAUTIONS: None

9. EXPOSURE CONTROL MEASURES

RESPIRATORY PROTECTION: Wear OSHA approved dust respirators to avoid nuisance dust when the permissible exposure limit might be exceeded.

VENTILATION	**LOCAL EXHAUST:**	Exhaust ventilation is recommended for operations where the permissible exposure limit might be exceeded.
	MECHANICAL (general):	Not applicable
	SPECIAL:	Not applicable
	OTHER:	Not applicable

EYE PROTECTION: Safety glasses or goggles should be worn to prevent dust from entering eyes.

PROTECTIVE GLOVES: Not necessary

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Not applicable

10. ECOLOGICAL CONSIDERATIONS

WATERFOWL TOXICITY: None known.

AQUATIC TOXICITY: None known.

FOOD CHAIN CONCENTRATION POTENTIAL: None expected.

BIOCHEMICAL OXYGEN DEMAND: None, products are not biodegradable.

ATMOSPHERIC: Contain no ozone depleting substances.

It is recommended that all recipients of this MSDS become familiar with and understand any hazards associated with this product. This information should then be made available to employees and customers who may come in contact with this material.

MEDICAL APPLICATIONS OF ZEOLITES

Report: August 13, 2008

1. Zeolite used to produce medical grade oxygen and Calcium from Zeolite used in QuikClot® brand hemostat agent to stop severe bleeding.

From: The article I previously sent titled; "Zeolite 101"

Zeolite-based oxygen concentrator systems are widely used to produce medical grade oxygen. The zeolite is used as a molecular sieve to create purified oxygen from air using its ability to trap impurities, in a process involving the absorption of undesired gases and other atmospheric components, leaving highly purified oxygen and up to 5% argon. QuikClot® brand hemostatic agent, which continues to be used successfully to save lives by stopping severe bleeding[1], contains a calcium loaded form of zeolite.

2. Zeolite added to treatment plan for HEP-C patients whose livers have developed cancer. (Note: see additional information regarding cancer treatments in item 4 below**)**

From: The Alchemist Lab

http://www.alchemistlab.com/FAQ3.html

Frequently Asked Questions –
Q: My alpha-fetoprotein is high and I'm scared to death, what does this mean?

Alpha-fetoprotein or A-f is a blood marker for liver cancer. Elevated A-f always happens in cases with progressed liver damage, at least Stage 3 in Hep C. In Hepatitis B, disease progression can jump from a relatively undamaged liver to liver cancer. Every case of liver cancer that I have seen in a Hep C patient the A-f has been over 1000. The leading liver surgeon in the Bay Area who sees many more cases than I, on my query of what is generally the lowest reading of A-f when there is cancer present, replied 200 - 400, but generally much higher. Most patients whose readings have been under 100 we have been able to reduce or normalize with a diligent protocol including coriolus, red clover combination, squalene, tian qi, glutathione, **and now zeolite**. High A-f readings are not death sentences, but a call to action.

3. Zeolite powder coating used specifically to harness the antimicrobial power of the silver ion for bone marrow transplant treatment

From: Silvermedicine.org

http://www.silvermedicine.org/medical-doctors-silver.html

The City of Hope's Helford Clinical Research Hospital, in Duarte, California (Completed in 2004)

One of the most advanced research & treatment hospitals in the United States, The Helford Clinical Research Hospital will house the nation's largest bone marrow transplant facility. Among its high tech state-of-the-art arsenal is a silver and zeolite powder coating used specifically to harness the antimicrobial power of the silver ion. The antimicrobial powder coating (AgION) is applied to steel machinery and equipment, and has EPA and FDA approval for use in a variety of applications.

The zeolite acts as a silver ion pump, and helps to maintain a sterile environment and prevent the proliferation of microbes. AgION is a surface treatment solution, and is especially ideal for equipment used in the medical field and the food industry.

"The Helford Clinical Research Hospital is a reflection of City of Hope's philosophy of fusing leading-edge technology and research with compassionate care of the soul,"
- Gil N. Schwartzberg, president and chief executive officer of City of Hope

4. Does a Zeolite supplement have health benefits?

From: Zeolite supplement by Ray Sahelian, M.D.

http://www.raysahelian.com/zeolite.html

This is actually a website the owner set up to sell Zeolite supplements but he's compiled quite a list of health benefits and studies in his "sales pitch". He does state, however, that more research needs to be done to verify the studies.

His list includes but is not limited to the following.

Zeolite and bone

Sodium Zeolite A Supplementation and Its Impact on the Skeleton of Dairy Calves. Biol Trace Elem Res. 2007 November. Turner KK, Nielsen BD, O'Connor-Robison CI, Rosenstein DS, Marks BP, Nielsen FH, Orth MW. Department of Animal Science, Michigan State University, East Lansing, 48824, USA.
Twenty calves were placed on study at 3 days of age and were placed according to birth order into one of two groups: SS, which received 0.05% BW sodium zeolite A (SZA) added to their milk replacer, and CO, which received only milk replacer. There were no differences in osteocalcin concentrations because of treatment, and CO calves had lower deoxypyridinoline concentrations than SS calves. No differences in bone architecture or mechanical properties were detected. SZA supplementation increased cortical bone and articular cartilage aluminum content. Glycosaminoglycan concentrations were not different in synovial fluid or cartilage. Supplementation of SZA appeared to alter the rate of bone turnover without altering bone strength. Aluminum concentrations in the bone and cartilage increased, which may be a concern, although the long-term consequences of such remain to be determined.

Zeolite supplement as immune modifier

Dietary supplementation with the tribomechanically activated zeolite clinoptilolite in immunodeficiency: effects on the immune system.

Adv Ther. 2004 Mar-Apr;21(2):135-47. Megamin GmbH, Berlin, Germany
TMAZ, a natural zeolite clinoptilolite with enhanced physicochemical properties, is the basis of the dietary supplements Megamin and Lycopenomin, which have demonstrated antioxidant activity in humans. The aim of this prospective, open, and controlled parallel-group study was to investigate the effects of supplementation with TMAZ on the cellular immune system in patients undergoing treatment for immunodeficiency disorder. A total of 61 patients were administered daily TMAZ doses of 1.2 g (Lycopenomin) and 3.6 g (Megamin) for 6 to 8 weeks, during which the patients' primary medical therapy was continued unchanged. Blood and lymphocyte counts were performed at baseline and at the end of the study. Blood count parameters were not relevantly affected in either of the two treatment groups. Megamin administration resulted in significantly increased CD4+, CD19+, and HLA-DR+ lymphocyte counts and a significantly decreased CD56+ cell count. Lycopenomin was associated with an increased CD3+ cell count and a decreased CD56+ lymphocyte count. No adverse reactions to the treatments were observed.

Zeolite and cancer

Nonfibrous Japanese Zeolite, and synthetic Zeolites are not classified as to their carcinogenicity to humans. These ingredients are not significantly toxic in oral acute or short-term oral or parenteral toxicity studies in animals. Inhalation toxicity, however, is readily demonstrated in animals, and appears to be a factor in mesothelioma in humans. Particle size, fibrogenicity, concentration, and mineral composition have the greatest effect on toxicity.

Anticancer and antioxidative effects of micronized zeolite clinoptilolite.
Anticancer Res. 2003 Mar-Apr;23(2B):1589-95. Ruder Boskovic Institute, Division of Molecular Medicine, Bijenicka 54, HR-10000 Zagreb, Croatia.
Treatment of cancer-bearing mice and dogs with micronized zeolite clinoptilolite (MZ) led to improvement of the overall health status, prolongation of life span and decrease of tumor size in some cases. It also reduced lipid peroxidation in the liver of mice. The experiments were performed on various tumor cell cultures and tumor-bearing animals. Immunohistochemistry was used to analyze if micronized zeolite clinoptilolite could interfere with Doxorubicin-induced lipid peroxidation and consequential production of 4-hydroxynonenal (HNE). MZ reduced the metabolic rate of cancer cells and increased binding of HNE to albumin in vitro. It selectively reduced generation of HNE in vivo in tumor stroma after Doxorubicin treatment leaving onset of lipid peroxidation intact in malignant cells. Combined treatment with Doxorubicin and MZ resulted in strong reduction of the pulmonary metastasis count increasing anticancer effects of Doxorubicin. CONCLUSION: Interference of micronized zeolite clinoptilolite with lipid peroxidation might explain some of the beneficial effects of this particular zeolite in combined cancer therapy.

Natural zeolite clinoptilolite: new adjuvant in anticancer therapy.
J Mol Med. 2001;78(12):708-20. Ruder Boskovic Institute, Division of Molecular Medicine, Zagreb, Croatia.
Natural silicate materials, including zeolite clinoptilolite, have been shown to exhibit diverse biological activities and have been used successfully as a vaccine adjuvant and for the treatment of diarrhea. We report a novel use of finely ground clinoptilolite as a

potential adjuvant in anticancer therapy. Clinoptilolite treatment of mice and dogs suffering from a variety of tumor types led to improvement in the overall health status, prolongation of life-span, and decrease in tumors size. Local application of clinoptilolite to skin cancers of dogs effectively reduced tumor formation and growth. In addition, toxicology studies on mice and rats demonstrated that the treatment does not have negative effects. In vitro tissue culture studies showed that finely ground clinoptilolite inhibits protein kinase B (c-Akt), induces expression of p21WAF1/CIP1 and p27KIP1 tumor suppressor proteins, and blocks cell growth in several cancer cell lines. These data indicate that clinoptilolite treatment might affect cancer growth by attenuating survival signals and inducing tumor suppressor genes in treated cells.

Prospective study of mesothelioma mortality in Turkish villages with exposure to fibrous zeolite.

J Natl Cancer Inst. 2006 Mar 15;98(6):414-7. Guven Hospital, Ankara, Turkey.

Mesothelioma incidence is high in certain villages on the Anatolian plateau in Turkey, where environmental exposure includes erionite, a form of zeolite fibers, from the local volcanic tuff. A prospective study of residents of two exposed and one nearby control village was initiated in 1979 and continued through December 31, 2003. A total of 891 men and women, aged 20 years or older, were included, 230 of them residing in the village without known exposure to erionite. During the 23-year follow-up, 372 deaths occurred; 119 of these were from mesothelioma, which was the cause of 44% of all deaths in the exposed villages. Seventeen patients had peritoneal mesothelioma; the rest had pleural mesothelioma. Only two cases of mesothelioma, one of each type, occurred in the control village-both in women born elsewhere. Our results emphasize the severity of the mesothelioma endemic in erionite -exposed areas of Turkey and call for intensified prevention of mesothelioma by limiting environmental exposures to these zeolite fibers.

Zeolite for burns

[Use of zeolite -containing biologically active food supplement in patients with burn trauma]

Vopr Pitan. 2004;73(1):24-7.

The content of cationic protein in blood neutrophils, the serum activity of lysosomal enzymes, the intensity of peroxide lipid oxidation, the antioxidant serum activity and the blood concentration of trace elements were assessed in patients with burn injury. Some patients as addition to the main therapy got zeolyt-containing biological active addition to food (BAAF) "Lytovit" with its ability for sorption and selective ion exchange. Before the beginning of the treatment in all patients high value of the cationic protein degranulation, decrease of neutrophils biocidity, and increase of lipid peroxidation against a background of antioxidant activity were found. In patients, who had got zeolyt containing BAAF, the normalization of trace elements blood concentration and indices of neutrophils functional activity began earlier, then in patients without zeolyte containing biological active addition treatment. "Lytovit" promoted the more early regress of the clinic manifestations: the body temperature normalization, wounds self-cleaning from purulent discharge, diminishing of frequency and area of the grafts lysis.

A Zeolite review

I came across an excellent review of zeolite that readers should be aware of.

[What a physician should know about zeolites]
Lijec Vjesn. 2000 Nov-Dec;122(11-12):292-8. Boranic M. Institut Ruder Boskovic, Zavod za molekularnu medicinu, Bijenicka cesta 54, 10000 Zagreb.
Zeolites are natural and synthetic hydrated crystalline aluminosilicates endowed with absorptive and ion exchange properties. They have found numerous and multifarous applications--in industry as catalysts and absorbents, in water sanitation for the removal of ammonia and heavy metals, in agriculture as fertilizers, and in animal husbandry as the absorbents of excreted material and as food additives. Medical applications have included the use in filtration systems for anesthesia or dialysis and as the contrast materials in NMR imaging. Recently, zeolite powders for external use have found application as deodorants, antimycotic agents and wound dressings. Peroral use of encapsulated zeolite powders enriched with vitamins, oligoelements or other ingredients has been claimed to exert beneficial medical effects. Ingestion of zeolites may be considered analogous to the clay eating (geophagia), considered in traditional medicine as a remedy for various illnesses. Being amphoteric, zeolites are partly soluble in acid or alkaline media, but within the physiological pH range the solubility is generally low. Minimal amounts of free aluminium or silicium from the ingested zeolites are resorbed from the gut. The bulk of ingested zeolite probably remains undissolved in the gut. In view of the ion exchange properties, zeolites may be expected to change the ionic content, pH and buffering capacity of the gastrointestinal secretions and to affect the transport through the intestinal epithelium. In addition, zeolites could affect the bacterial flora and the resorption of bacterial products, vitamins and oligoelements. The contact of zeolite particles with gastrointestinal mucosa may elicit the secretion of cytokines with local and systemic actions. Reactive silicium ions might react with biomolecules of the intestinal epithelium, and if resorbed, do so in other cells. Mutagenic and carcinogenic effects of zeolite particles have been described, resembling such effects of asbestos fibers. Thus, local and systemic effects of zeolites may be complex and interrelated, and an objective assessment requires appropriate experimental models.

Zeolite marketers get FDA letter
October 2007 The FDA has ordered Zeo Health Ltd to stop illegal claims for three zeolite mineral products that have zeolite. These include Destroxin (for cancer prevention and treatment), Esdifan (for diarrhea) and Zeo (for hangover preventive).

5. The following is a list of questions and answers received in a teleconference call conducted on March 4, 2006, in which physicians and other health care practitioners were able to ask questions of biochemist Rik Deitsch about the activated liquid zeolite detoxifier.

Question: Do you have any findings regarding liquid zeolite and children with ADHD or autism?

From: ZeolitesHealth.com

http://www.zeoliteshealth.com/zeolite-questions-by-doctors_2.html

Rik: This was something completely new to me. I'd never studied autism. But after I received dozens of testimonials and reports about liquid zeolite's ability to increase awareness in autistic children, and increase activity in autistic children, I started looking into it. I found out that a lot of the issues had to do with deactivation of metallo-proteins. These are proteins and enzymes that use metals as co-factors. A lot of heavy metals can push away those cofactors. For example, mercury can displace magnesium in some cases, and lead or arsenic can displace zinc. So if you're displacing these natural metals as cofactors of metallo-proteins, then everything starts to shut down. That seems to be the case with a lot of these autistic kids. We don't know exactly which metals are so responsible. There has been a lot of research into mercury poisoning – for example, thimerosal in vaccines – for autistic children. Regarding ADD and ADHD, there have been a lot of new studies done using PET scans and spectroscopes, identifying seven or eight distinct types of ADD and ADHD due to different cofactors. Almost all of them have to do with activation or deactivation of metallo-proteins. So again, zeolite is acting very simply to remove heavy metals, allowing the system to work more efficiently. And, in that population, we're seeing it as an increased reactivity or increased activity for improved neurological function.

Question: In our particular group, we're experiencing incredible results with autistic children. We're very excited about what this is doing for these kids. One of the things these kids are experiencing is chelation therapy. Rik, do you want to talk about how liquid zeolite is a natural chelator?

Rik: Absolutely. That is exactly what liquid zeolite is doing – it's chelating or sequestering metals and removing them from the body. But it's a much more efficient and much safer chelating agent. For example, a lot of people are using EDTA as a chelator. EDTA has a negative two charge, and it is only charge specific. It will take any plus two charge molecule out of the body. Certainly that includes lead, but it also includes calcium and magnesium. So when you're chelating with EDTA, you have to keep adding calcium and magnesium back into the patient, and you wind up with diminishing results – where eventually all you're chelating out is the calcium and magnesium that you keep adding back in, and you never get out all the heavy metals from the body. That is one of the negatives. Another negative is that as it chelates to the metal, the metal is still available to the environment to react. That's why chelators can cause a lot of kidney and bladder toxicity on their way out of the body. With zeolite, for the most part, heavy metals and toxins are absorbed into the zeolite cage and, for all practical purposes, they can no longer react with their surroundings. Zeolite is also very specific for the heavier metals. It has almost no reactivity towards calcium, magnesium, sodium, phosphorus, and the healthier elements. So it's a really efficient, very active chelating agent that is specific not just for charge, but also for molecular size, shape, and even the structure of the molecule is important. In some cases, some molecules have something called "induced fit." As they get closer to the zeolite, they actually change shape to be adsorbed onto the surface of the zeolite.

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Question: Have any studies been done on people who are HIV positive and those with full blown AIDS? If so, what is the outcome?

Rik: We haven't looked at AIDS yet per se, although I have talked to several HIV patients who have been taking it. As a clinician, I have to say it is very hard to prove in a population like that that your product is causing benefits because the average HIV patient is taking no fewer than 10 different medications. That's why, when we approached a virus, we decided to approach hepatitis C, because most hepatitis C patients are un-medicated and they keep very stable viral loads. If their viral loads go down, you know it's because your product had an effect, which is what we've seen with the hepatitis C study that we're doing. I have been invited to conduct an HIV trial on failed patients. These are patients that failed all of their medication, that have been on medications for such a long time that their particular virus has mutated to the point that the medications they're on are no longer effective. These patients are looking for some sort of stop gap, something that can keep their viral loads down while new drugs are being invented. So I've been invited to do a study with liquid zeolite and that population, and we'll probably do that this summer.

Question: Testimonials have stated that cases of herpes zoster seem to have cleared up after people started taking liquid zeolite. Is there anything more scientific that you have on herpes zoster?

Rik: We haven't looked clinically at shingles or any other virus other than hepatitis C. But we have received two or three dozen shingles testimonials, and there is one published study on this particular zeolite, clinoptilolite, and herpes. There are actually two published studies on viruses –one on herpes and one on entroviruses. That is what encouraged us to do a viral study. I have been invited to do two different studies in Japan. One would be on shingles, and the other would be on Sjögren's syndrome, which is believed to be an auto-immune disease, where people have dry eyes and dry mouth due to inflammation of the lachrymal and salivary glands. We're going to start both of those studies no later than the beginning of June.

Question: On an earlier call, I remember you spoke about using liquid zeolite with people who have hemochromatosis. Could you please explain how liquid zeolite interacts with excess iron stores?

Rik: In a nutshell, hemochromatosis patients basically cannot waste iron fast enough, so they store their iron, and it doesn't turn over. The only real treatment for this disease is phlebotomy, to give blood usually every week or every couple of weeks. The two patients I was talking about were giving a pint of blood every two to three weeks to measure their iron scores. Since they started taking liquid zeolite, they no longer have to donate iron or donate blood. When we looked at the atomic-absorption spectroscopy studies, iron was very very low on the affinity scale, and very few patients lost any iron at all. This is where concentration matters. Zeolite is only going to draw off iron when a patient has an excess of it. In that population, Liquid zeolite could be an amazing product by stabilizing the iron stores – if not completely eliminating the need for phlebotomy, then it might reduce that need greatly.

Question: Does liquid zeolite remove depleted uranium from our bodies? Our concern is about all the service men who will be returning after being exposed to our armaments that are now being laced with depleted uranium?

Rik: I have no data on that. Depleted uranium is positively charged and should have an affinity for zeolite, but I don't have any direct evidence of that. You have been kind enough and several distributors have been kind enough to send me tons of information about depleted uranium. As an academic, until I can do a study on that population and be able to somehow measure uranium that comes off the body, I'm not going to be able to give a definitive yes or no. I will say that normal excretion of radioactive compounds has been shown to be up-regulated with zeolite. In fact, there were three published studies right after Chernobyl that didn't measure uranium but that did measure radioactive strontium and cesium in goats and sheep that were fed this particular zeolite – clinoptilolite. Their excretion increased anywhere from 15 to 20 times over normal excretion just by adding clinoptilolite to their diet.

Question: Are dentists, dental assistants, and hygienists exposed to mercury poisoning from the mercury vapor when drilling an amalgam?

Rik: I've seen so many journal articles for and against the mercury amalgams, for and against the dangers of working with the mercury amalgams. Certainly they do put out mercury vapor. How much and how active that vapor is, is so much in the air. I will say that there is no good mercury in the body. And so as far as I'm concerned, you shouldn't use anything that contains mercury. Even the old blocking chemicals that hat makers used to use were mercury chemicals, where the mercury was not free, but the mercury vapors were such that – you know how they said "mad as a hatter." Remember the mad hatter in Alice in Wonderland? The mercury compounds that hat makers used to block hats would drive them insane. They caused insanity and mental breakdown. Certainly I would say that any exposure to mercury is a bad thing. Liquid zeolite has been shown to pull mercury out of the body, and that's a good thing. Mercury and cadmium are right on top of the list. They kind of compete for the highest affinity. Mercury comes out very efficiently right away. I can't say yes or no one way or another whether dentists are in more or less danger because they're working with these mercury amalgams. The jury is still out on that.

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Question: You mentioned before that there was a hepatitis C study being done with liquid zeolite. When will this information be available? And the study that you mentioned that was being performed at Duke University testing the urine of people using liquid zeolite, when will those results be available?

Rik: At the conference in Orlando, Dr. Jim Flowers of Eno Research and Development, who was the principle investigator on the urine excretion study, will be onstage explaining the results. We used healthy students from Duke University, but we also used

20 miners from West Virginia, because that is such a timely topic. Everyone is concerned about the health of miners, the safety issues with them. It is so much in the news that, by including this population in the study, we are guaranteed publication. So it was just smart to include them. All it necessitated was an extra researcher who would drive every week or so to pick up urine in West Virginia. We'll have those results for the conference March 17th and 18th in Orlando. As far as the hepatitis C study goes, it is almost completed. We have three more patients that will be finishing up in two weeks. But because the company is so cognizant of the problem with talking about treating disease with the product, we won't be sharing the viral data at the conference. We will seek publication, we'll pursue this avenue of research, but we won't be talking about it in public forums with the company. It's the sort of thing where we can say that liquid zeolite stabilized immune system function and, if you want to know how, point to this article. But we can't call it an anti-viral because that would be making a claim that can only be made about a drug.

Question: Of the Alzheimer's patients who have been helped by liquid zeolite, has it just stopped the progression of the disease, or are you seeing any signs of formal mental function?

Rik: We see all sorts of anecdotal evidence. But we haven't done any studies on this, and I have do always have to have the caveat that we can't make any claims about the treatment or prevention of disease. What I can say is that, in those disease states that seem to have as part of their causation or etiology heavy metal toxicity – for example, Alzheimer's and aluminum – then we do see improvements with liquid zeolite. Now does it stop the disease? Does it reverse the disease? I really don't have the evidence to support that.

Question: I'm concerned about distributors claiming too much and then getting the FDA on our backs. Rik, can you give us some sense or some words we might use in trying to tell other people about liquid zeolite, so we don't overstep our bounds and get the company in trouble?

Rik: The easiest thing is to stick to what the company has already written. On the company website and in the company literature, all of those claims have been cleared by the FDA counsel for the company. So that is the safest thing to do. If you start thinking about what claims you can make, try to think about structure and function claims. Liquid zeolite has the ability to remove environmental toxins from the body. It has the ability to detoxify the body. It has the ability to stabilize a healthy immune system. It has the ability to stabilize healthy pH level. That is the sort of thing you can say. If you talk about stabilizing, talk about maintaining health, those are the great ways you can talk about the product. You can always point to published research. You can point to that hepatitis C study and say, "This study was conducted on the product." You can't just say, "This product cures hepatitis C, and this is the proof." Alright, so you have to be very careful about that. Understand I work with the FDA on a daily basis with my biotech company. I am not a conspiracy theorist when it comes to government agencies. I think there are a lot of people that have their hands tied by a horrible bureaucracy and therefore can't get the work done that they really want to do. But they do want to make sure that the public is

protected from a lot of frauds, and so they watch what health claims are made in the public domain. The major job of the FDA is to write letters. I call them "the sleeping giant." They write a lot of letters and, if those letters get ignored, the FDA goes into action. And it's not just the dietary supplement companies. The FDA's after the drug companies too. They want to make sure that there are good products out there for everybody, and that the claims are legal claims to make.

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