

Doctor's Data, Inc. is pleased to present a luncheon lecture by **Dr. Sherri Tenpenny, DO:**

Breast Health: Improving the Odds Using Iodine as a Weapon



Sherri Tenpenny, DO



Breast Cancer Stats

- ◎ Breast cancer is the second most commonly diagnosed cancer among females in the United States (after lung)
 - ◎ In 2006:
 - Invasive breast cancer: 214,000
 - Non-invasive breast cancer: 62,000
 - Died: 41,430
- *Breast Cancer Today*, Dr. Len Lichtenfeld, Deputy Chief Medical Officer, American Cancer Society. October, 2006

A Woman's Chances of Breast Cancer Increases With Age	
By age 30	1 out of 2,212
By age 40	1 out of 235
By age 50	1 out of 54
By age 60	1 out of 23
By age 70	1 out of 14
By age 80	1 out of 10
Lifetime	1 out of 8

Source: National Cancer Institute. 5-3-2002



Problems with the Current Standard of Care

- ⊙ In Conventional Medical circles, there is no meaningful discussion about breast health and breast cancer prevention using nutrition and lifestyle modification.
- ⊙ No meaningful discussion about the use of nutrients with proven efficacy and supported by published research.
- ⊙ No interest in using all available tools to assess risk and identify areas of concern in the breast, such as state-of-the art infrared imaging. Digital IR can detect problems long before a problem can be identified by mammography.
- ⊙ Most unfortunately, mammography is a late test.

So, what can be done
to improve *breast health*
so we have less focus on
breast disease?

Improving Breast Health

Tool box of tools

◎ **Bio-identical hormones**

◎ **Nutraceuticals:**

◎ **Calcium-d-glucarate 500 mg TID**

◎ Alternative Medicine Review. Vol. 7, No 4 2002. Monograph

◎ **Vitamin D 2000 IU/day**

◎ American Journal of Clinical Nutrition, Volume 85, Pages 6-18. Jan 2007

◎ **Lymph detoxification and exercises**

◎ **Breast Digital Infrared Scanning**

◎ A tool approved in 1982 by the FDA that is gaining acceptance as an adjunctive tool for breast health

◎ **Iodine: The missing link to breast health**

◎ **The Thyroid Connection**

ANATOMY

- ◎ Mammogram
- ◎ Ultrasound
- ◎ MRI

- ◎ Clinical breast exam
- ◎ Self breast exam

PHYSIOLOGY

- ◎ **Breast Thermography**

**Why don't we know
about it and
routinely use it?**

Thermography Bias

- “...(the use of) mammography has a monopoly and *virtual stranglehold* on breast cancer detection.”
- “The enormous industry supporting mammography is no doubt responsible for the fact that newer, more accurate, less dangerous, painless [and less expensive] techniques **such as thermography**, nipple secretion analysis, and duct imaging *have not been given a fair trial.*”
- “The material provided by professional advocacy groups and pro-mammography governmental organizations is found to be *‘information poor’* and *‘severely biased’* in favor of screening mammograms.”
 - **British Medical Journal, Vol. 328, January 17, 2004, pp. 148-53.**
“Presentation on websites of possible benefits and harms from screening for breast cancer: cross sectional study.”

Chemistry and Background on Iodine

Iodine, an essential trace element, was present during the primordial development of the earth, but it has been leached from the surface soil by snow, rain, and glaciation and carried into the sea. The ocean is now the primary source of iodine.

Despite nearly 100 years of iodized salt, iodine deficiency still exists in the US

- The First National Health and Nutrition Examination Survey (NHANES I) took place between 1971 and 1974 found 2.6% of US citizens were iodine deficiency. (at 32 mcg/dl)
- NHANES III, conducted between 1988 and 1994, found 11.7% of all US citizens are iodine deficient. (at 14.5 mcg/dl)
- The results from NHANES 2000 indicated the median urinary iodine level of the population six to 74 years of age was 16.1 mcg/dl.
- The results from NHANES 2004 was essentially the same.

Why is iodine deficiency increasing?

- Decrease in **salt** consumption—due to concerns over sodium (hypertension, etc)
- Decrease in **egg** consumption—due to concerns over cholesterol
- Decrease in **fish** consumption—due to concerns over mercury
- Minimal access to “sea vegetables”—**seaweed, kelp**
- **Soil depletion:** minerals are decreased by accelerated deforestation and soil erosion
- Food grown in **iodine-deficient soils/regions** do not provide enough iodine for the people and livestock living there.
- There are acute iodine deficiencies in the soils around the globe, particularly in the Great Lakes basin.

How Iodine Gets Into Tissues

- The Na-Iodide Symporter (NIS) is a membrane bound glycoprotein that transports iodine into the follicular cells of the thyroid and other tissues.
- NIS has been found **on many different tissues**, disproving the previously held view that it is a thyroid-specific protein.
 - Dohan, Orsolya, et.al. The Sodium/Iodide Symporter (NIS): Characterization, Regulation, and Medical Significance *Endocrine Reviews* 24 (1): 48-77

Iodine for the Whole body

- It has been suggested that extrathyroidal iodide transport is catalyzed by plasma membrane proteins that are very similar, if not identical, to thyroid NIS and these proteins actively transports iodide into these tissues:
 - **Thyroid**
 - **Gallbladder, pancreas, liver, and mucosa of gastric, small, and large intestine, placenta, renal tubular cells, bladder, endometrium, thymus and bronchial epithelium**
 - **Nasopharynx, lacrimal glands, choroid plexus and the ciliary body of the eye (DRY EYES)**
 - **Salivary glands (DRY MOUTH)**
 - **Mammary glands**
 - **Dohan, Orsolya, et.al. The Sodium/Iodide Symporter (NIS): Characterization, Regulation, and Medical Significance Endocrine Reviews 24 (1): p. 62**
 - **Wapnir, Irene, et al. Immunohistochemical Profile of NIS... J Clin Endocrinol Metab 88: 1880–1888, 2003.**

Iodine for the Whole body

- Indirect evidence of NIS activity has been determined by RT-PCR testing in other tissues
- NIS transcripts have been detected (by RT-PCR) in the pituitary gland, testis, ovary, prostate, adrenal glands, heart, thymus, omentum, gallbladder, and lung bronchiolar epithelium
- The following cancers express NIS :
 - Invasive , non-invasive and DCIS, in situ breast cancer
 - Thyroid, bladder, cervix, colon, esophagus, kidney, liver, lung, ovary, pancreas, prostate, skin (squamous and melanoma), stomach, testis, thymus, tonsil, endometrium.
 - NIS expression is absent in normal lung alveolar and yet approximately two thirds of lung adenocarcinomas and squamous cell carcinomas demonstrated presence of NIS
 - NIS expression is absent in normal cervix, esophagus, ovary, spleen, and skin, and yet 46–68% of the corresponding malignant tissue cores demonstrated NIS presence.
 - **Wapnir, Irene, et al. Immunohistochemical Profile of NIS... J Clin Endocrinol Metab 88: 1880–1888, 2003.**

Iodine for the Whole body

- Something to ponder...
- The high prevalence of functionally active NIS in human breast cancer is being extensively studied as a possible way to treat breast cancer with radioactive iodide, similar to treatment of thyroid cancer
- Iodide is has documented antioxidant and anti-proliferative properties, contributing to the integrity of normal cells
- Could it be that cells express active, cell-surface NIS for the purpose of trapping and importing iodide combat developing cancer cells?

Effect of Iodine deficiency

(in order of occurrence):

1. Depletion of iodine in thyroid.
2. Thyroid enlargement (goiter develops) to trap available iodine.
3. Decrease in serum T4 and Increased TSH (to increase the activity of symporter).
4. Increase in T3/T4 ratio (more T3, less T4) as body conserves iodine and shunts toward T3. Therefore, hyperthyroidism has its source in iodine deficiency.
 - Werner & Ingbar's *The Thyroid: A Fundamental and Clinical Text*. Chapter 1
5. **Low iodine leads to fibrocystic breasts** (density, lumps, bumps) and breast pain before menses.
 - *The Breast Journal*. Volume 10, Number 4, 2004 328–33. 2004.

The Effects of Iodine on Breast Tissue

Iodine and Breast Health

- Once inside non-thyroidal cells, peroxidase enzymes have been shown to efficiently incorporate iodide into tissues.
 - In the **mammary gland**, iodide is bound to tyrosyl residues of caseins and other milk proteins, and this organification has been shown to correlate with peroxidase activity.
 - Cann, Stephen A. Iodide Accumulation in Extrathyroidal Tissues. The Journal of Clinical Endocrinology & Metabolism Vol. 84, No. 2 821
- There is evidence to suggest that coupling of iodide and proteins also occurs in **inactive mammary tissue**.
 - Strum JM, Phelps PC, McAtee MM. Resting human female breast tissue produces iodinated proteins. J Ultrastruc Res. 84:130–139. 1983
 - Eskin B. Human breast uptake of radioactive iodine. Obstet Gynecol 44:398–402. 1974

Iodine and Breast Health

We've known this for a long time:

1967: An iodine deficiency in rat causes tissue hyperplasia and atypia in mammary tissue.

- » Eskin B. Mammary gland dysplasia in iodine deficiency. *JAMA* 1967;200:115–19.

1979: Iodine deficiency in estradiol-treated rats lead to pathological changes in breast tissue including cystic changes, periductal fibrosis and lobular hyperplasia.

- Strum, JM. Virshows Arch B Cell Pathol Incl Mol Pathol. 1979; 30:209-20

1993: Between 1975 and 1989 Ghent and Eskin treated more than 1300 patients with a variety of iodine compositions and observed an improvement rate of 40–70% in subjective (pain) and objective (fibrosis) symptoms. In addition, the minimum amount of iodine to protect the breast from fibrocystic disease and cancer is 20-40 times more than is needed to prevent goiter (ie. 3-4 mg/day for breasts)

- Ghent W, Eskin B. Iodine replacement in fibrocystic disease of the breast. *Can J Surg* 1993;36:453–60.

Iodine and Breast Health

Iodine:

1995: Histological changes in breast tissue can be *reversed* by iodine.

- Eskin, B. Biol Trace Element Res. 1995;39:9-18

1996: Rat studies have demonstrated that iodine suppresses the formation of breast tumors.

- Funahashi, H. J. Surg. Oncology 1996;61:209-13

1996: The although the mechanism is unclear, nonlactating breast has a relatively large capacity for iodide uptake.

- Hammami MM. Bakheet S. Radioiodine breast uptake in nonbreastfeeding women: clinical and scintigraphic characteristics. J Nucl Med. 1996 Jan;37(1):26-31

Iodine and Breast Health

Iodine:

1997: Iodine absorption and incorporation into tissues occurs in the same ductal epithelium where the majority of breast cancers occur.

- Russo, J. Differentiation and breast cancer. *Medicina*. 1997;57:Suppl 2:81-9

2006: These data show that functional NIS expression is not restricted to lactating mammary gland and malignant breast tissue, but can also be detected in benign breast lesions, such as fibroadenoma.

- F. Berger et al. Mammary radioiodine accumulation due to functional sodium iodide symporter expression in a benign fibroadenoma

Improving Breast Health

- Incidence of fibrocystic breast changes – pain, lumps, bumps and density – among women has been reported to be >60 percent.
 - Approximately 5 percent of these changes could be considered risk factors for developing breast cancer.
- These changes respond and reverse in the presence of 3-6mg/day of iodine for 3-4 months.
 - Jack H. Kessler, PhD. The Effect of Supraphysiologic Levels of Iodine on Patients with Cyclic Mastalgia. *The Breast Journal*, Volume 10, Number 4, 2004 328–33. **2004.**

Concerns about excess iodine...

...are they real?

Concerns about supra-physiological doses of iodine

- **1948**: Wolff and Chaikoff reported that organic binding of iodide in the rat thyroid *in vivo* was blocked when iodide plasma levels reached some “critical high threshold”, a phenomenon known as the acute Wolff-Chaikoff effect.
 - Wolff J, Chaikoff IL. Plasma inorganic iodide as a homeostatic regulator of thyroid function. *J Biol Chem* 174:555–564. 1948.

Not commonly known about the Wolff-Chaikoff effect

- **1949**: The maximum duration of the inhibitory effect that iodide had on the thyroid was 50 hours.
- Within two days, an “escape” or adaptation occurs in most people, and normal hormone biosynthesis resumes.
 - Wolff J, Chaikoff IL, Goldberg RC, Meier JC. The temporary nature of the inhibitory action of excess iodide on organic iodide synthesis in the normal thyroid. *Endocrinology* 45:504. 1949.

Side effects from taking Iodine

- **Iodism and Ioderma:**

- A mildly toxic syndrome resulting from use of iodine
- Characterized by skin rashes, acne, stomatitis, unpleasant metallic taste, gastritis, nausea, frontal headache, hyper-salivation, fatigue, coryza, sneezing, conjunctivitis, laryngitis, bronchitis.

- **Delange, FM. *Iodine Deficiency*. The Thyroid. Lippencott Williams, Wilkens, 2000. p. 295-329**

Side effects from taking Iodine

Could iodism and ioderma simply be a cellular displacement of fluorine, chlorine and bromine occurring by replenishing iodine?

Bromine toxicity: Skin rashes, severe acne, appetite loss, fatigue, metallic taste. Bromine can inhibit T4 and T3 production. In addition, brominated tyrosine can accentuate hypothyroidism.

- **Sources:** PBDE is a bromine-based fire retardant used in carpets, mattresses, upholstery, furniture and various electronic equipment. Hot tubs use bromine instead of chlorine.
- **Medications:** Atrovent Inhaler, Atrovent Nasal Spray, Pro-Banthine (for ulcers), anesthesia.
- **Food sources:**
 - **All bakery products** that use white flour contain bromine.
 - **Brominated vegetable oil** is used as an emulsifier in citrus-flavored soft drinks such as Mountain Dew, Gatorade, Sun Drop, Squirt and Fresca to help fat-soluble citrus flavors stay suspended in the drink.

Fluoride toxicity: Skin rashes, acne, gastritis, migraine-like headaches, stomatitis.

Medications: Flonase, Flovent, Paxil, Prozac and other SSRI anti-depressants, 5-Fluorouracil, other general anesthesia

Removed (from market): Baycol, Fen-Phen, Omniflox, Posicor, Propulsid

Other sources: Fluoride dental tablets, public drinking water, tooth paste

Chloride toxicity: Headache, sinus inflammation, taste disturbances.

Sources: Public drinking water, Splenda (Sucralose), hot tubs, propellants in spray cans, swimming pools

How much iodide is safe?

- Many people regularly ingest huge amounts of iodine - in the range **100-200 mg/day** - without apparent adverse effects.
- Occasionally, significant thyroid effects may be seen, but generally high doses are well tolerated without difficulty.
- Braverman *et al.* showed that people without evidence of underlying thyroid disease **almost always remain euthyroid** in the face of large amounts of iodide.
 - Braverman LE, Ingbar SH. Changes in thyroïdal function during adaptation to large doses of iodide. J Clin Invest 42:1216–1231. 1963

***KEY:* ADD IODIDE SLOWLY.**

Can start with topical Lugol's, progress to drops of Lugol's in water, then 10 mg/day and increase as symptoms allow

The more deficient a person is, the more likely they are to have a side effect.

If they have an unknown thyroid nodule, adding slowly will identify problem and allow for further assessment and correction.

Testing for Iodine Deficiency

There is little consensus about the best way to measure for iodine deficiency.

- Blood: not reliable
- Skin spot iodine: qualitative screening
- Spot urine iodine AND 24 hr urine with challenge is the best way to assess your patients

Testing for Iodine Deficiency

- The kidneys excrete approximately 90% of ingested iodine.
- The best diagnostic test to identify deficiency is a 24-hour urine collection
- Spot urines can also give a lot of information
 - 24 hrs not always collected well
 - Can help in the evaluation of kids
 - High spot: possibly poor prep
 - Very low spot with good prep: good sign of deficiency
- Problem with spot urines
 - Can vary a lot with dietary intake
 - Important to do dietary preparation!

Test Preparation

- **MUST be off ALL iodine supplements for 72 hrs**
- **Have them consume a low iodine diet for at least two days **AND** on the day of the test**
- **Allowed Foods and Ingredients**
 - **Fruits:** All except rhubarb and maraschino cherries
 - **Vegetables:** All ok without salt, except no soybeans
 - **Nuts:** Unsalted nuts and nut butters
 - **Eggs:** Whites only
 - **Fresh meats:** Up to 6 ounces a day (not processed)
 - **Grain and cereal products:** Up to 4 servings per day; read ingredients
 - **Pasta:** Ok if no high-iodine ingredients
 - **Oils:** All vegetable oils, including soy oil, ok
 - **Condiments:** Sugar, jelly, jam, honey, maple syrup, black pepper, fresh or dried herbs and spices all ok

SEX: Female
AGE: 46

Random

DOCTOR'S DATA LABORATORY

Urine Iodide; Pre & Post Loading

Iodide	$\mu\text{g/g cr}$	mg/24 hr	Reference Range
Sample 1 PRE	0.3		0.1- 0.45 $\mu\text{g/g cr}$
Sample 2 POST	35	21	0.1- 0.45 mg/24 hr
% Excretion/24 hr		42%	n/a

Iodide levels include iodide and iodine reduced to iodide. **Excretion percentage** is calculated by dividing the patient's mg/24hour Iodide result by the Iodine/Iodide dosage (in mg) recorded on the requisition form, then multiplying by 100.

Creatinine	Result	Reference Range
Sample 1 PRE	25	35- 225 mg/dL
Sample 2 POST	610	600- 1900 mg/24hr

Urine Creatinine is used to account for urinary dilution effects in less than 24-hour collections and to assess the collection completeness in 24-hour collections. For estimation of glomerular filtration rate (GFR), a Creatinine Clearance test is recommended.

SEX: Female
AGE: 38

First Morning Void (6:30 AM)

DOCTOR'S DATA LABORATORY

Urine Iodide; Pre & Post Loading

Iodide	µg/mg cr	mg/24 hr	Reference Range
Sample 1 PRE	0.18		0.1- 0.45 µg/mg cr
Sample 2 POST	22	27	0.1- 0.45 mg/24 hr
% Excretion/24 hr		54%	n/a

Iodide levels include iodide and iodine reduced to iodide. **Excretion percentage** is calculated by dividing the patient's mg/24hour Iodide result by the Iodine/Iodide dosage (in mg) recorded on the requisition form, then multiplying by 100.

Creatinine	Result	Reference Range
Sample 1 PRE	230	35- 225 mg/dL
Sample 2 POST	1220	600- 1900 mg/24hr

Urine Creatinine is used to account for urinary dilution effects in less than 24-hour collections and to assess the collection completeness in 24-hour collections. For estimation of glomerular filtration rate (GFR), a Creatinine Clearance test is recommended.

DOCTOR'S DATA LABORATORY

Urine Halides; Pre & Post Loading

Iodine	µg/mg cr	mg/24 hr	Reference Range
Sample 1 PRE	0.44		0.1- 0.45 µg/mg cr
Sample 2 POST	32	22	0.1- 0.45 mg/24 hr
% Excretion/24 hr		44%	

Fluoride	µg/mL	mg/24 hr	Reference Range
Sample 1 PRE	.5		0.2- 1.1 µg/mL
Sample 2 POST	.9	3.9	2.3- 4.2 mg/24 hr

Bromine	µg/mg cr	mg/24 hr	Reference Range
Sample 1 PRE	3.6		0.9- 4.7 µg/mg cr
Sample 2 POST	4.1	3.1	0.9- 4.7 mg/24 hr

Creatinine	Result	Reference Range
Sample 1 PRE	57	35 - 225 mg/dL
Sample 2 POST	680	600- 1900 mg/24hr

Comments:

#1 Date Collected: 3/15/2007

#1 Collection Period: **Random**

#2 Date Collected: 3/16/2007

#2 Collection Period: **24 hr coll**

#2 Volume: 2000 ml

#2 Loading Dosage: 50 MG

Date Received: 3/17/2007

Date Completed: 3/18/2007

<dl: less than detection limit

Method: I, Br by ICP-MS/ F by ISE
Creatinine by Jaffe method

Correcting Iodine Deficiency: Start with Selenium

Iodine and Selenium Deficiency

Prolonged selenium deficiency coupled with iodine deficiency can lead to **tissue hypothyroidism** and impaired brain function.

- Campos-Barros A et al. Effects of selenium and iodine deficiency on thyroid hormone concentrations in the central nervous system of the rat. *Eur J Endocrinol.* 1997 Mar;136(3):316-23. PMID: 9100558

Iodine and Selenium Deficiency

Clinical Pearl:

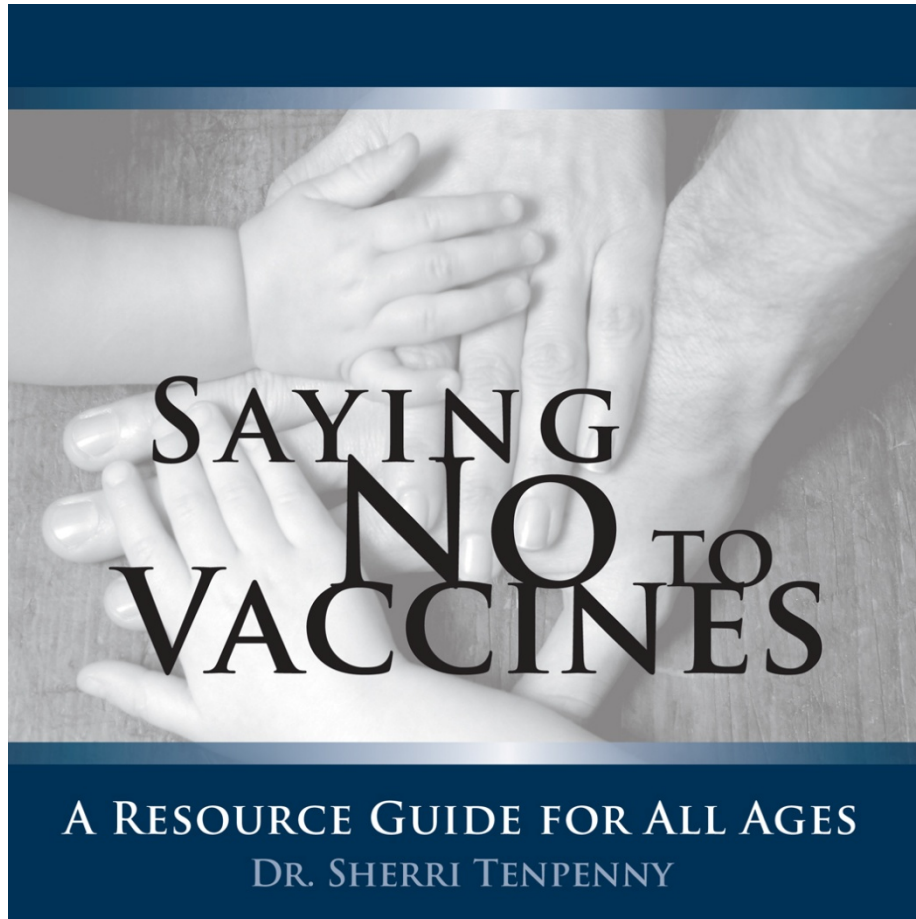
Even mild selenium deficiency can contribute to the development of autoimmune thyroid diseases, especially *Hashimoto disease*.

- Selenium and thyroiditis. J Endocrinol. Jul;190(1):151-6. 2006

Recommended Iodine Dosage

- Adding Iodine may produce symptoms
 - **Manage the symptoms**
 - **Effect on thyroid is most prominent in patients who are most deficient**
 - **Symptoms are worse if the patient is also selenium depleted**
- Adding iodine to decrease breast pain and fibrosis can increase the TSH level
 - Monitor with symptoms
 - Treat the patient! ☺
 - Visit Doctor Data's booth for more information!

One last announcement!



Also includes:

- A (Short) History of Mandatory Vaccination
- Vaccine Exemptions for Schools, Healthcare, Military & Other Special Circumstances
 - Vaccine Ingredients and Schedules
- 350+ Medical References Documenting Vaccine Problems . . .and more!

“Saying No to Vaccines: A Resource Guide for All Ages” is not just about childhood vaccinations. Addresses problems with vaccines in all age groups

- Refutes The 25 most common misconceptions about vaccines
- Issues facing:
 - International travelers
 - Healthcare workers
 - Nursing home residents
 - Adoptions
 - College students and those in the military.

• **Includes: 75 minute DVD** about concerns surrounding HPV cervical cancer vaccine Gardasil and other info. not in the book.

- A portion of proceeds will support **national autism groups**
- A portion of proceeds will **send a book** to every one of our 7,382 state legislators.

NOW AVAILABLE:

\$55 (+s/h)

440-239-3438

www.SayingNoToVaccines.com



A photograph of a whale breaching the ocean surface at sunset. The whale's large, dark, curved tail is visible above the water, with a large splash of water rising from the point of exit. The sun is a bright, glowing orb in the upper left corner, casting a warm, golden light across the entire scene. The sky is a gradient of orange and yellow, and the water is dark with white foam from the splash.

Thank you ...

Enjoy the rest of the conference!