Environmental Information Association Your News

www. eia-georgia.org

VOLUME V, Issue 1 *Late* ***Spring 2008***

CALENDAR:

Topics, locations and times will be posted on the Georgia EIA Web Page as they become Available

June 16th
Surety Bonds
Sam Newberry

August 18th
Contracts, Tort, Regulatory liabilities
Dr. Karl Duff

October
Charity motorcycle ride with the Travelling Men to benefit the Scottish Rite Children's Hospital (Children's Healthcare of Atlanta)

October 20th
Annual Joint Meeting with Georgia EPD

December 5th
Holiday Gathering and Annual Chapter Meeting with Election Results

The Georgia EIA Website

Visit: www.eia-georgia.org to see our frequently updated web page that incorporates general information, a calendar of events for the chapter, past newsletters, meeting reports and more!

THE FINAL RULE

New OSHA Rule Requires Employers to Pay for Most Personal Protective Equipment

Labor and Employment Update

November 27, 2007

Under a new Occupational Safety and Health Administration (OSHA) rule, employers must pay, with limited exceptions, for their employees' personal protective equipment (PPE) when the gear is necessary to protect employees from job-related injuries, illnesses and fatalities. Employers must comply with the new rule by May 15, 2008. The new rule and explanatory notes are available at:

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=20094

POLLEN, POLLEN, and more POLLEN

Pollen is a fine to coarse powder consisting of microgametophytes (pollen grains), which produce the male gametes (sperm cells) of seed plants. The pollen grain with its hard coat protects the sperm cells during the process of their movement between the stamens of the flower to the pistil of the next flower.

Each pollen grain contains vegetative (non-reproductive) cells (only a single cell in most flowering plants but several in other seed plants) and a generative (reproductive) cell containing two nuclei: a tube nucleus (that produces the pollen tube) and a generative nucleus (that divides to form the two sperm cells). The group of cells is surrounded by a cellulose cell wall and a thick, tough outer wall made of sporopollenin.

Pollen is produced in the microsporangium (contained in the anther of an angiosperm flower, male cone of a coniferous plant, or male cone of other seed plants). Pollen grains come in a wide variety of shapes, sizes, and surface markings characteristic of the species (see Electron micrograph at top right). Most, but certainly not all, are spherical. Pollen grains of pines, firs, and spruces are winged. The smallest pollen grain, that of the Forget-me-not (Myosotis spp.), is around 6 µm (0.006 mm) in diameter. The study of pollen is called palynology and is highly useful in paleoecology, paleontology, archeology, and forensics.

In angiosperms, during flower development the anther is composed of a mass of cells that appear undifferentiated, except for a partially differentiated dermis. As the flower develops, four groups of sporogenous cells form with in the anther, the fertile sporogenous cells are surrounded by layers of sterile cells that grow into the wall of the pollen sac, some of the cells grow into nutritive cells that supply nutrition for the microspores that form by meiotic division from the sporogenous cells. Four haploid microspores are produced from each diploid sporogenous cell called microsporocytes, after meiotic division. After the formation of the four microspores, which are contained by callose walls, the development of the pollen grain walls begins. The callose wall is broken down by an enzyme called callase and the freed pollen grains grow in size and develop their characteristic shape and form a resistant outer wall called the exine and an inner wall called

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the intine. The exine is made up of a resistant compound called sporopollenin; the intine is made up of cellulose and pectin. The exine is what is preserved in the fossil record.

Pollen grains may have furrows, the orientation of which (relative to the original tetrad of microspores) classify the pollen as colpate or sulcate. The number of furrows or pores helps classify the flowering plants, with eudicots having three colpi (tricolpate), and other groups having one sulcus.

Except in the case of some submerged aquatic plants, the mature pollen-grain has a double wall, a thin delicate wall of unaltered cellulose (the endospore or intine) and a tough outer cuticularized exospore or exine. The exine often bears spines or warts, or is variously sculptured, and the character of the markings is often of value for identifying genus, species, or even cultivar or individual. In some flowering plants, germination of the pollen grain often begins before it leaves the microsporangium, with the generative cell forming the two sperm cells.

The transfer of pollen grains to the female reproductive structure (pistil in angiosperms) is called pollination. This transfer can be mediated by the wind, in which case the plant is described as anemophilous (literally wind-loving). Anemophilous plants typically produce great quantities of very lightweight pollen grains, sometimes with air-sacs. Non-flowering seed plants (e.g. pine trees) are characteristically anemophilous. Anemophilous flowering plants generally have inconspicuous flowers. Entomophilous (literally insect-loving) plants produce pollen that is relatively heavy, sticky and protein-rich, for dispersal by insect pollinators attracted to their flowers. Many insects and some mites are specialized to feed on pollen, and are called palynivores.

In non-flowering seed plants, pollen germinates in the pollen chamber, located beneath and inside the micropyle. A pollen tube is produced, which grows into the nucellus to provide nutrients for the developing sperm cells. Sperm cells of Pinophyta and Gnetophyta are without flagella, and are carried by the pollen tube, while those of Cycadophyta and Ginkgophyta have many flagella.

When placed on the stigma of a flowering plant, under favorable circumstances, a pollen grain puts forth a pollen tube which grows down the tissue of the style to the ovary, and makes its way along the placenta, guided by projections or hairs, to the micropyle of an ovule. The nucleus of the tube cell has meanwhile passed into the tube, as does also the generative nucleus which divides (if it hasn't already) to form two sperm cells. The sperm cells are carried to their destination in the tip of the pollen-tube.

A Russian theoretical biologist, Vigen Geodakyan (Geodakian), has suggested that the quantity of pollen reaching a pistillate

flower can transmit ecological information and also regulate evolutionary plasticity in cross-pollinating plants. Plentiful pollen indicates optimum environmental conditions (for example a plant that is situated at the center of its natural range, in ideal growing conditions, with a large number of male plants nearby, and favorable weather conditions), whereas a small amount of pollen indicates extreme conditions (at the borders of its range, with a deficiency of male plants, and adverse weather conditions). Geodakian believes that the quantity of pollen reaching a pistillate flower defines the sex ratio, dispersion and sexual dimorphism of a plant population. High pollen quantity leads to a reduction of these characteristics and stabilization of a population. Small quantity leads to their increase and destabilization of a population.

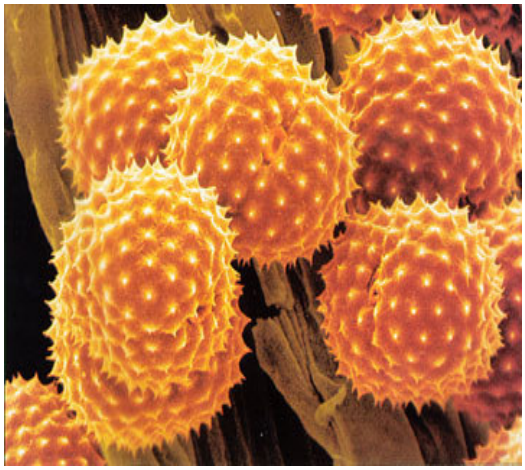
Dependence of the secondary sex ratio on the amount of fertilizing pollen was confirmed on four dioecious plant species from three families — Rumex acetosa (Polygonaceae), Melandrium album (Cariophyllaceae), Cannabis sativa and Humulus japonicus (Cannabinaceae).

Dependence of offspring phenotype variety on amount of pollen was observed by Ter-Avanesyan in 1949. All three studied species of plants (cotton plant, black-eyed pea, and wheat) showed dependence in the direction forecasted by the theory — fertilization with a small amount of pollen resulted in an increase in the diversity of the offspring. Ter-Avanesian writes that as a result of a limited pollination “instead of homogenous sorts we get populations”.

Pollen's sporopolenin outer sheath affords it some resistance to the rigours of the fossilisation process that destroy weaker objects; it is also produced in huge quantities. As such, there is an extensive fossil record of pollen grains, often disassociated from their parent plant. The discipline of palynology is devoted to the study of pollen, which can be used both for biostratigraphy and to gain information about the abundance and variety of plants alive - which can itself yield important information about paleoclimates. Pollen is first found in the fossil record in the late Devonian period and increases in abundance until the present day.

Allergy to pollen is called hay fever. Generally pollens that cause allergies are those of anemophilous plants (pollen is dispersed by air currents.) Such plants produce large quantities of lightweight pollen (because wind dispersal is random and the likelihood of one pollen grain landing on another flower is small) which can be carried for great distances and are easily inhaled, bringing it into contact with the sensitive nasal passages.

In the US, people often mistakenly blame the conspicuous goldenrod flower for allergies. Since this plant is entomophilous (its pollen is dispersed by animals), its heavy, sticky pollen does not become independently airborne. Most late summer and fall pollen allergies are probably caused by ragweed, a widespread anemophilous plant.



Arizona was once regarded as a haven for people with pollen allergies, although several ragweed species grow in the desert. However, as suburbs grew and people began establishing irrigated lawns and gardens, more irritating species of ragweed gained a foothold and Arizona lost its claim of freedom from hay fever.

Anemophilous spring blooming plants such as oak, birch, hickory, pecan, and early summer grasses may also induce pollen allergies. Most cultivated plants with showy flowers are entomophilous and do not cause pollen allergies.

A variety of producers have started selling pollen for human consumption, often marketed as a healthy food.

The FDA has not found any harmful effects of pollen consumption, except from the usual allergies. However, FDA does not allow pollen marketers in the United States to make health claims about their produce, as no scientific basis for these has ever been proved. Furthermore, there are possible dangers not only from allergic reactions but also from contaminants such as pesticides and from fungi and bacteria growth related to poor storage procedures. A manufacturers's claim that pollen collecting helps the bee colonies is also controversial.

GAEIA President, Gordon Reynolds, has had a very promising telephone conversation with the GAEPD's Maggie Williams. Mrs. Williams is discussing preliminary plans for an environmental expo this year. Everyone will be updated as new information is released..... Stay tuned.

GAEIA Supports Our Troops

NEXT GEORGIA EIA MEETING!
Monday June 16th, 2008

Surety Bonds

Presented By:
Sam Newberry

Sponsored by:

Analytical Environmental Services Inc.
www.aesatlanta.com
Allison Cantrell
770.457.8177

Winter Environmental
www.winter-environmental.com
Martha Romanek
404.965.3338

This meeting will assist in educating the vast world of surety bonding as presented by Sam Newberry. This will be a wonderful opportunity to ask the detailed questions with correct answers. Building owners, contractors, consultants will all benefit from this informative presentation.

Location: Winter Construction, 1330 Spring Street, NW, Atlanta, GA 30309 (Directions on next page)

Cost: $5 (members), $10 (non-members), Students no charge

AGENDA:
5:30 – 6:30 pm, Refreshments & Social
6:30 – 6:45 pm, Georgia EIA Update/News
6:45 – 7:00 pm, Presentation/comments by our Sponsor, Analytical Environmental Services Inc.
7:00 – 7:45 pm, Presentation by Sam Newberry
7:45 – 8:00 pm, Questions, Answers and Closing Remarks

For additional information, please call Gordon Reynolds at 770.554.3600

DIRECTIONS TO WINTER CONSTRUCTION

Winter is located in the 1330 Spring Street Building at Midtown Heights, between 17th Street (where the new yellow bridge crosses over the interstate from Atlantic Station) and 16th Street.

From MARTA

Exit at Arts Center Station onto West Peachtree Street. Turn right to walk north on West Peachtree Street to 16th Street. Turn right and walk down 16th Street. Turn right to walk north on Spring Street (cross street with light at 16th and Spring). Winter is in the 5-story, beige building on the left.

From the North

I-75:

Travel south on I-75 and exit at the 10th Street/14th Street exit. Stay in the right lane and follow curve to the right onto 16th Street. Go up the hill and turn at the next right (between row of townhouses). Turn right at the 17th Street (yellow) bridge. Turn right at Spring Street and take an immediate right to enter the driveway in front of Nan Restaurant. Turn left to enter big parking lot and park against the fence that faces the interstate [sign states "Winter Visitor Parking].

I-85:

Travel south on I-85 and exit at the 17th Street/14th Street exit. Stay in the right lane and go to 17th Street. Turn left at the 17th Street (yellow) bridge. Turn right at Spring Street and take an immediate right to enter the driveway in front of Nan Restaurant. Turn left to enter big parking lot and park against the fence that faces the interstate [sign states "Winter Visitor Parking].

From the South

I-75-I-85:

Travel northbound on I-75/I-85. Exit at 14th Street and turn right. Continue on 14th Street until you reach West Peachtree Street. Turn left onto West Peachtree Street (it is one way) and continue north, staying in the left lane, until you reach 17th Street. Turn left at 17th Street. Turn left onto Spring Street and get in lane farthest to the right. Take an immediate right to enter the driveway in front of Nan Restaurant. Turn left to enter big parking lot and park against the fence that faces the interstate [sign states "Winter Visitor Parking].

Main Phone Number: (404) 588-3300