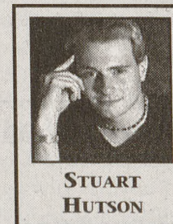


SCI F.Y.I.



STUART HUTSON

Here's the idea. You write in with questions about how, when or why things work or happen — and I find the answers. Questions can be anything from "How does a car battery work?" to "Why is the sky blue? (or around here, red)."

To start things off, we will begin with a question asked by almost every freshman who has had the misfortune of crossing the wrong street.

Question: What is that weird steam coming from manholes like the one near the Northside parking garage? And why does it smell so bad?

—Stuart Hutson, senior journalism major

Answer: Well, I'm glad I asked that.

In the past, students have concocted a myriad of theories, ranging from a gaggle of underground pot smokers to sewer gas.

According to Chuck Sippial, vice president of administrations and former director of the physical plant, the steam is actually evaporating ground water.

The central physical plant pumps hot steam all the way over to another facility on West Campus via a system of underground pipes. Sippial said this steam is sometimes as hot as 650 degrees Fahrenheit when it first leaves the plant.

Ground water that collects around these pipes gets heated up and evaporates out through the grates and manholes that we see all over campus.

This is why the steam is usually more prevalent after it rains.

Hong Bin Zhan, an A&M professor of hydrogeology, said the unusual smell is most probably due to a small amount of sulfur in the ground water.

"The water here has about 8.8 milligrams of sulfate in every liter of water," Zhan said. "It is not a dangerous amount, but it is probably enough to cause the smell."

Sulfur is most commonly associated with the smell of rotten eggs, which I hope you will agree is more like the smell of the steam than that of pot smoke, not that you would know what that smelled like anyway...

Got the idea?

Good.

Question: So, how do I ask a question?

Answer: Just email your question to scifi@hotmail.com along with your name, classification (senior, junior, sophomore or freshman) and major.

It's that simple.

Pets are allergy sufferers, too

The truth about cats and dogs (and ticks and pollen and ragweed...)

STUART HUTSON
The Battalion

It is that sniffing, scratching, watering-eyes time of year. People are not the only ones affected by the onslaught of allergens waiting at the doorstep. Midsummer is the worst time of year for pets who suffer from the pains of allergies.

"Any animal can get allergies, not just humans, and especially dogs and cats," said Dr. Christine Rees, a professor of veterinary medicine at Texas A&M's small animal clinic. "I have a friend that just examined a polar bear in Georgia for allergies."

Midsummer provides an overabundance of fleas, ticks, grass and weed irritants.

Rees said pet allergies can be divided into four categories: flea and tick allergies, inhaled allergies, food allergies, and contact allergies.

Flea and tick allergies

Rees said allergic reactions to the bites of fleas, ticks and other insects are the most common complications seen by veterinarians.

"The animals are allergic to a toxin found in the saliva of the adult fleas and ticks," she said. "This basically causes a histamine reaction in the skin."

A histamine is a chemical released by a cell when the cell comes in contact with a specific triggering chemical, such as a flea's toxin. Histamine reactions are meant to protect against specific poisons that animals encounter, but in the case of allergic reactions, histamines are over-released and cause severe inflammation and irritation.

"Young or immature fleas don't have this toxin, so they don't cause the allergic reaction," Rees said. "So, when you buy a flea and tick killer, make sure that it specifically kills adults."

She also suggested using preventive measures such as flea dips and indoor/outdoor pesticides to rid both the home and the yard of the pests.

Rees said this year is worse than most because of the wet weather during the early spring months.

"Wet weather makes it easy for [insects] to propagate," she said. "It provides ample moisture for nesting places and egg laying and so on."

Inhaled allergies

While inhaled allergens account for most allergies among humans, they are the second most prevalent allergies for dogs and the third most prevalent allergies for cats.

These allergies may be caused by anything, including dust, pollen, grasses or weeds, that irritate nasal passages and skin.

"The important thing with these is that they are correctly diagnosed," Rees said. "To do this, we first perform a skin test for 65 different irritants, just like a doctor would on a human, and then we do a subdermal test for delayed reactions where we inject an amount under the skin and then wait about 20 minutes to see if it has any negative effects."

She said that a veterinarian would then prescribe an antihistamine pill or allergy shot depending on the strength and type of reaction to an allergen. Though the prescription is often very effective, Rees said pet owners can take other steps to help reduce inhaled allergies.

"Besides vacuuming and otherwise cleaning, you could use a HEPA filter to help out the air quality," she said. "You can also wipe the animal's feet every time it comes in from outdoors. It turns out that if a dog walks through something it is allergic to, it will keep getting exposure to whatever sticks to its feet and enhance the reaction."

Food allergies

While not associated with seasonal changes, food allergies are the second most common allergy among cats and the third most common among dogs.

"A food allergy is when an animal develops a bad reaction to a specific protein, carbohydrate or fatty acid within a food," Rees said. "Sometimes this happens when an animal has been eating the food for years. We are not really sure why it happens."

The allergy usually manifests itself through a skin rash or irritation.

"The key here is also to diagnose as quickly as possible and then eliminate whatever is causing the allergy, but this can be tricky because I have seen animals become allergic to as many as five different food ingredients at the same time," Rees said. "Another difficulty is the timing. Sometimes an animal will have a reaction within six hours. Sometimes it takes two to three days."

These allergies, however, may sometimes have odd results.

"A guy once brought in a dog whose head was tremendously swollen like a balloon because the guy had fed the dog eggs," she said.

Contact allergies

A contact allergy occurs when an animal has skin contact with a chemical that induces a rash or other negative reaction.

These chemicals may range from poison ivy to household cleaners.

"People should always be careful when using cleaners

around animals," Rees said. "One of the most common irritants is the powdered carpet deodorizers that dogs and cats get all over themselves."

When to visit the veterinarian

"You should pay a visit to the veterinarian any time you see your dog or cat licking, biting, or scratching themselves to the point of hair loss or irritation," Rees said. "It may be an allergy, or it may be something more serious. The only way to help out either one is for the animal to be seen by a trained specialist."



STUART HUTSON/THE BATTALION

A&M physicist search for invisible matter

PATRICE PAGES
The Battalion

Texas A&M physicists are trying to show that a big part of the universe may be taken up by WIMPs.

Since the 1930s, physicists have believed that the stars, planets and other miscellaneous items they see taking up the night sky make up only 10 percent of the universe's matter.

The stars would not move the way they do if the visible matter were the only matter in the universe. Something else exerts a gravitational force on these stars; cosmologists call it "dark matter."

For many years, cosmologists thought dark matter was simply objects not radiating light, such as planets, small stars and black holes. However, the measured number of these objects is not large enough to account for all dark matter.

Cosmologists have therefore theorized that previously undiscovered particles compose the remaining amount of matter. Such particles would be very heavy, but would still interact

very weakly with surrounding matter. These particles are dubbed Weak Inter-

University of California-Berkeley. James White, a Texas A&M physicist, said that in the Milky Way — or any spiral-shaped galaxy — WIMPs are expected to surround the galaxy in a sphere.

"The galaxy was initially spherical," White said. "Particles making ordinary matter, as well as WIMPs, were all distributed randomly in this sphere. Then ordinary matter started to condense by swirling to the center of the sphere, making a spiral-shaped disk — the visible part of our galaxy. WIMPs instead are clumps of matter that could not condense and stayed in the initial sphere."

White is setting up an experiment to detect WIMPs passing through the Earth. The core of his experiment is a tank of liquid argon. If a WIMP goes through the tank, it creates an electrical signal.

During the 1990s, many experiments were set up to detect these mysterious WIMPs, but only two experi-

ments have showed results.

The first experiment, called the Dark Matter experiment (DAMA), claimed to have detected WIMPs. The second, the Cryogenic Dark Matter Search (CDMS), did not see a single WIMP.

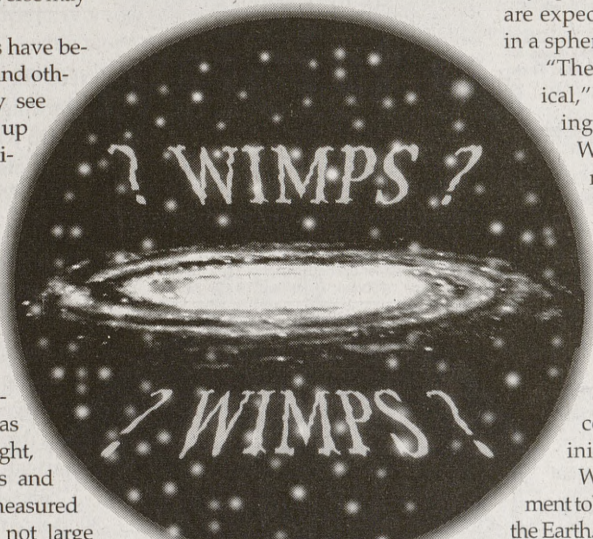
"The big issue of these experiments is that the rate [of WIMPs] is so low that you are worried about the background (interference)," said Dan Akerib, a professor of physics at Case Western Reserve University in Cleveland, Ohio, and a researcher with CDMS.

The background is interference that can create false positives caused by cosmic rays from space or natural radioactivity from radioactive materials surrounding the experiment.

In an attempt to reduce background, most of the experiments take place deep underground where cosmic rays cannot reach.

The CDMS has been working 30 feet underground. However, starting fall of 2001, the experiment will move to a deeper site 2,000 feet underground.

White will perform extensive studies of the different sources of background affecting the planned site of his experiment



RUBEN DELUNA/THE BATTALION

acting Massive Particles, or WIMPs.

"WIMPs are something you know must exist but it is so hard to get hold of them," said Maria Isaac, a physicist at the

Scientists find sleeping improves brain functioning

(AP) — Getting a good night's sleep after trying to master a tough new task might just reinforce what you have learned.

European researchers say dreaming might be the brain's way of replaying experiences and lessons so that they are fixed in the memory for use later on.

The scientists used advanced imaging technology and found that the same regions of the brain that are buzzing while we learn a new task are also active while we dream. This heightened activity was observed during the brief but active stage known as rapid-eye movement, or REM, sleep.

The study was published in the August issue of *Nature Neuroscience* and was led by Pierre Maquet of the University of Liege in Belgium.

Animal studies had shown similar results. Rats that ran new routes through mazes showed increased activity in the same portions of their brains when they slept afterward. But the human brain is more complex.

"It is wonderful to see such results demonstrated in humans for the first time," said David Silbersweig, co-director of the functional neuroimaging research laboratory at the New York-Cornell Medical Center.

Humans spend one-third of their lives asleep, but sleep's purpose is poorly understood. Among other things, scientists believe

Humans spend one-third of their lives asleep, but sleep's purpose is poorly understood.

dreaming may help sort out emotions, impressions and other ideas.

In the study, 18 volunteers ages 18 to 25 spent several hours learning how to quickly recognize symbols as they flashed on a computer screen and press the same symbol on a keyboard.

During the test, the activity in several regions of their brains was monitored by PET scans, which reveal how the brain is functioning by watching its use of glucose and oxygen, the fuels of brain cells.

Groups of volunteers were tested in several ways. Those who took the computer test for

several hours, slept and retook the test when they woke up scored the highest, with even faster reaction times after they slept.

PET scans showed that during REM sleep their brain activity and blood flow were similar to when they were taking the test.

Researchers said the volunteers might have been practicing the test in a REM dream and storing what they learned.

However, Maquet's team could not identify the precise cellular mechanisms involved. Nor are all memories consolidated only during REM sleep, the researchers said.