

CHASTAIN-SKILLMAN, INC.

ENGINEERS • ARCHITECTS • SCIENTISTS • SURVEYORS

CONSULTANT'S UPDATE

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INITIAL NOTICE OF CONTAMINATION BEYOND PROPERTY BOUNDARIES

By Greg Lassi, PG, MPH



To better protect public health, the Florida Department of Environmental Protection (FDEP) included new notice provisions within its Petroleum (Chapter 62-770), Drycleaning (Chapter 62-782), Brownfields (Chapter 62-785), and Contaminated Site Cleanup Criteria (Chapter 62-780) rules which became effective April 17, 2005. One of these new notice provisions, the "Initial Notice of Contamination Beyond Property Boundaries", requires the Person Responsible for Site Rehabilitation (PRSR), its authorized agent, or other representative to give actual notice as soon as possible, but no later than 10 days from discovery, that contamination exists in any medium beyond the boundaries of the property to FDEP's Division of Waste Management office in

Tallahassee. The actual notice shall be provided on forms titled "Initial Notice of Contamination Beyond Property Boundaries" and mailed by "Certified Mail, Return Receipt Requested". A copy of the notice shall be mailed to the appropriate FDEP District Office and the County Health Department. The notice shall include the following information:

- The location of the property at which site rehabilitation was initiated and contact information for the PRSR, its authorized agent, or other representative.
- A listing of all record owners of any real property, other than the property at which site rehabilitation was initiated, at which contamination has been discovered; the parcel identification number for any such real property; the owner's

(Continued on page 2)

SIDEWALK DESIGN IS EASY—YEAH RIGHT

By Ken Thiele, PE



My first sidewalk design project was in 1982, which consisted of about 3,600 lineal feet of a 5-foot wide concrete sidewalk. The specification stated that the sidewalk must match the asphalt road at each street intersection and the cross slope should not exceed 1/4 inch per foot.

Since that time, a lot of changes have occurred, most notably the Federal Americans with Disabilities Act (ADA) of 1990. Title II and III of the ADA sets the standards for accessibility to places of public accommodation and commercial facili-

ties by individuals with disabilities. The standards established the design and construction criteria for sidewalk widths, slopes, cross slope and ramps.

Not to be outdone, the State of Florida enacted the "Florida Americans with Disability Accessibility Implementation Act". The purpose of the Florida Act was to incorporate the Federal ADA, while at the same time to maintain those provisions of Florida Law that are more stringent than the ADA accessibility standards. Currently, the Florida regulations can be found in Chapter 11 of the 2001 Edition of the Florida Building Code.

(Continued on page 4)

EOH NEWS

◆ *Mold Remediation Worker Protection Guidelines Released by the National Institute of Environmental Health Sciences (NIEHS/Jun'05)*

◆ *Reminder: Florida Mold Legislation (Sections 489.1134 and 501.933) effective as of October 1, 2005 require:*

- *Mold Remediators to be trained, certified and insured (489.1134)*
- *Mold Assessors to be trained, certified and insured (501.933)*

◆ *Ergonomics: Several studies confirm preference among office workers for work station postural variation*



Inside this issue:

Initial Notice of Contamination Beyond Property Boundaries	1
Sidewalk Design is Easy—Yeah Right	1
Various Types of Surveys Available for Order	2
Common Indoor Molds and Potential Health Hazards	3
Safety Tips for Activities in the Summer Heat	4
Continuing Education: A Big Pay-off for Everyone	5
Chastain-Skillman Expands Orlando Operations	5

(Contamination—Continued from page 1)

address listed in the current county property tax office records; and the owner's telephone number.

- Separate table(s) by medium (groundwater, soil, surface water, or sediment) that list sampling locations; sampling date(s); names of contaminants detected above cleanup target levels (CTLs); their corresponding CTLs; the contaminant concentration(s); and whether the CTL is based on health, nuisance, organoleptic, or aesthetic concerns.
- A vicinity map that shows the sampling locations with corresponding laboratory analytical results and the date(s) on which the sample(s) was (were) collected, and identifies the property boundaries of the property at which site rehabilitation was initiated and the other property(ies) at which contamination has been discovered during such site rehabilitation.

House Bill 937, an Act related to contamination notification, was passed by the House and Senate and approved by the Governor on May 24, 2005. The Act will take effect on September 1, 2005. The Act provides the necessary statutory authorization for the FDEP to promulgate the new waste cleanup rules. The FDEP's

notification responsibilities in the Act include, but are not limited to, the following: within 30 days after receiving the actual notice, or within 30 days of the effective date of this act if the department already possesses information equivalent to that required by the notice, the department shall send a copy of the notice, or an equivalent notification, to all record owners of any real property, other than the property at which site rehabilitation was initiated, at which contamination has been discovered.

Additional information regarding these public notification requirements is available on FDEP's "Public Notification of Off-Site Contamination" webpage and within FDEP's Petroleum (Chapter 62-770), Drycleaning (Chapter 62-782), Brownfields (Chapter 62-785), and Contaminated Site Cleanup Criteria (Chapter 62-780) rules.

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VARIOUS TYPES OF SURVEYS AVAILABLE FOR ORDER

By Teena D. Newman

Frequently, people need the services of a Professional Surveyor and Mapper, although many only require this service once or twice in their lifetime. This need is usually in conjunction with the purchase of a home or other real estate. A survey is needed before a land title is transferred, before land is subdivided, developed by construction of roads, buildings, fences, etc. and before a boundary dispute arises. When engaging a surveyor, always verify that he or she is state licensed.

Some of the various types of surveys are Boundary, ALTA/ACSM Land Title, Topographic, Geodetic (based on State Plane Coordinates), Construction Layout, Record (As-Built) and Specific Purpose. Boundary Surveys document the perimeters and locate fixed improvements on the parcel. ALTA/ACSM Land Title Surveys require certain specific information be presented for the distinct and clear understanding between the client (insured), the title insurance company (insurer), and the surveyor for the purpose of confirming the title to real property is free and clear of survey matters other than those disclosed on the survey drawing or indicated on the plat or map. Topographic Surveys depict

selected natural and artificial features of the surface to determine horizontal and vertical spatial relations. Geodetic Surveys take into account the curvature of the earth and astronomic observations, which results in positions based on a recognized datum. Construction Layout Surveys utilize the measurements made while construction is in progress, to control elevation, configuration and horizontal position and dimensions. Record Surveys are performed to obtain horizontal and vertical dimensions so that constructed improvements may be located. Specific Purpose Surveys are performed for a specific purpose other than those defined above. An example would be to show locations of monitor wells or wetland flagging.

Upon the initial contact with our firm's Survey Department, it is important to determine, upfront, what type of survey our clients need. As with any business, some clients have a good understanding of the type of survey needed. A few simple questions can determine the needs of others. To process the client's request, it is necessary to obtain certain property information in order to research the parcel and provide our Director of Surveying, Robert DuBois,

PLS, with the criteria necessary to determine the cost of the survey. An example of the information needed would be the legal description or property appraiser's parcel identification number. In some cases, a title commitment would be requested. In the case of an ALTA/ACSM Land Title Survey, a completed Table A (Optional Survey Responsibilities and Specifications) would need to be provided at the time the survey is ordered. When requesting Construction Layout, engineered construction plans would need to be furnished.

The cost of a survey is dependent upon many factors, such as the type of survey required, availability of existing records and monuments, and the type of terrain and location of the work to be performed. Because of these variables, it is often difficult to determine an exact fee. However, based on the general experience of the surveyor, an approximate estimate can usually be furnished.

Teena Newman is the Project Coordinator for Chastain-Skillman's Lakeland office Survey Department with over 6 years experience. She can be reached at (863) 646-1402 or tnewman@chastainskillman.com.

COMMON INDOOR MOLDS AND POTENTIAL HEALTH HAZARDS

By Paul Osley, PE, BCEE, CIH, CSP



Internet web-sites and news media headlines, such as “*Is Your Office Killing You?*”, “*Beware of Toxic Mold*” and “*Attack of the Killer Mold*” have contributed to public awareness and fear about mold contamination in both public and residential buildings. Coupled with subsequent hurricane related damage and moisture intrusion problems in Florida, the mold related health concerns have catapulted to an all time high.

Although some fungal species produce mycotoxins, most mold varieties cannot cause toxic effects or disease unless the exposed person is severely immunodeficient, according to the American Conference of Governmental Hygienists (ACGIH) and recent Center of Disease Control (CDC) study, “*Damp Indoor Spaces and Health*” by the National Academies, Institute of Medicine. However, pre-existing medical conditions, such as severe allergies, asthma, and upper-respiratory illness, can be exacerbated by damp indoor mold conditions. Nearly all types of mold can cause allergenic effects in sensitized individuals, and some types (although a relatively small number) may produce mycotoxins.

So what is known about some of the most common indoor molds? The following table lists some common indoor molds and their potential associated health hazards.

Mold & Fungi Species	Health Impact	Where Found
<i>Alteraria</i>	Effects asthma Eye infections	Aging plants Cellulose tiles/wallpaper
<i>Aspergillus</i> <i>Fumigatus</i> <i>Flavus</i> <i>Niger</i>	Allergic lung disease from ingestion of contaminated grains	Decaying leaves Tile grout/sealants Condensed water impacts
<i>Cladosporium</i>	Very common allergenic response	Where freestanding water is available Tile grout/sealants Condensed water impacts Most common outdoor air mold
<i>Penicillium</i>	Fungal infections	Cold temperatures Refrigerated food spoilage Very common in air
<i>Mucor</i>	Pathogenic rarely	Grows on sugar and starches
<i>Cryptococcus neoformans</i>	Infections Meningitis AIDS patients	Pigeon/chicken dropping Guano fertilizers
<i>Histoplasma capsulatum</i>	Infections TB-like lung disease	Soil containing bird and bat droppings
<i>Stachybotrys chartarum</i>	Debatable/health effects; fatigue, rashes, headache, nausea, coughing, and diarrhea	Damp cellulose materials Water-damaged areas

Regardless of the species present, both EPA and OSHA state there should not be a significant amount (>10 sq.ft.) of active mold growth inside a building. If mold contamination is visually present on building materials or suspected, a prompt investigation, assessment and remediation (if needed) must be performed. Mold risk assessment efforts that address facility design, site selection, construction, operation and maintenance can play a large role in reducing the potential for mold. In our next article, “*Proactive Property Management: Minimizing the Risks of Mold*”, we will discuss program procedures and plans to reduce building related mold risks.

Paul Osley is a Principal/Director of Environmental & Occupational Health (EOH) in Chastain-Skillman’s Tampa Office. In addition, Paul oversees EOH services in the Atlanta and Orlando Offices. His work focuses on EOH, indoor air quality, industrial hygiene, safety, hazardous waste and remedial engineering projects for private and municipal clients. Paul received Bachelor’s Degrees in Chemical and Environmental Engineering from the Florida Institute of Technology in 1984 and a Master’s degree in EOH in 1997 from the University of South Florida. He can be reached at (813) 621-9229 or posley@chastainskillman.com.

(Sidewalk—Continued from page 1)

Over the years I have designed many other sidewalk projects. My most recent project was in 2004. It was a standard strip-type shopping center consisting of a long string of retail stores with a sidewalk along the entire front, separating the stores from the parking lot.

The current version of Chapter 11 of the Florida Building Code was used as the design standard, and a checklist of design criteria was used to prepare the construction drawings, which included:

- If at all possible, make the running slope (slope parallel to the direction of travel) greater than 1:20. Then, the ramp criteria is not applicable.
- If the running slope is less than 1:20, then ramp criteria must be met. However, in no case can the running slope on a ramp be greater than 1:12.
- If the ramp height is greater than 6 inches, then a hand rail is required.
- If the ramp length is more than 30 feet, or if the ramp height is more than 30 inches, then a landing is required.
- The cross slope (slope perpendicular to the direction of travel) must not exceed 1:50, which is equivalent to two percent (2%).

Checking the old standard of ¼ inch per foot, the cross slope calculated to be 2.08%. As such, the specification was changed to ³/₁₆

inch per foot, which calculated to be 1.56 %.

- Changes in levels greater than ½ inch require a ramp.

A note was added to the specifications that, should settlement occur during the course of construction such that any section of the sidewalk has a change in height greater than ½ inch from the adjacent section, then the sidewalk must be removed and replaced.

- If a sidewalk crosses or adjoins a vehicular way, a 36-inch wide Detectable Warning Surface needs to be constructed where the sidewalk meets the asphalt at each location.

The sidewalk design included all of these elements. Then, the edge of the sidewalk was considered. What type of edge should be constructed where the surface of the sidewalk meets the face? The 6-inch rise from the asphalt to the top of the sidewalk is similar to a 6-inch curb. Therefore, the FDOT Design Standards for curbs was checked. The FDOT Standards use a 2-inch radius to round off the edge. A note was added to the specifications that the edge of the sidewalk must have a 2-inch radius.

The current philosophy of this litigious society is that if something happens, it is always the fault of someone else. As such, I present the following scenario:

Assume a shopper leaves the store and pushes a cart along the edge of the sidewalk. The cart slips off the edge of the sidewalk and the person continues to hold on to the

cart. As a result, the person falls and breaks a hip. The injured party finds an attorney. The shopping center owner and engineering company are named in a Personal Injury Lawsuit. The attorney finds an obscure section in the FDOT Construction Specifications that cites the finished edge of a sidewalk should be done with an edging tool having a radius of ½-inch.

If this actually happened, who is at fault? Would this be another design standard that should be added to the checklist?

Where will all this end? Have we reached the pinnacle? It is doubtful. The Supreme Court extended the reach of a landmark Federal ADA law ruling on June 6, 2005 that all foreign cruise ships that dock at U.S. seaports must provide access to handicapped people on all ships. All said, even the simplest of tasks, such as sidewalk design, aren't that simple anymore.

Ken Thiele is a Principle/Senior Project Manager in the Civil Department in Chastain-Skillman's Lakeland office, and has been with the firm for nearly 24 years. While his areas of expertise include permitting and design of water and wastewater supply, treatment and distribution facilities, Ken specializes in civil engineering for drainage; street and highway design; and all phases of Site Development Engineering. Ken holds a Bachelor's Degree in Civil Engineering from the University of Wisconsin. He can be reached at (863) 646-1402 or kthiele@chastainskillman.com.

SAFETY TIPS FOR ACTIVITIES IN THE SUMMER HEAT

By Allan Duhm, CLU



It looks as though our summer heat and humidity have finally arrived to stay and, with those conditions, this article is intended to remind everyone of a few safety basics for outdoor activities as related to protection from the effects of intense heat. Our concern and suggestions for our clients' workplace safety can be carried over into personal activities as well. In just the past few days, two friends have shared with me how they became sick almost to the point of vomiting or having to completely stop their efforts, while participating in moderate to hard bicycling efforts of between 40 and 90 minutes. Certainly this is a warning sign to beware of the effects that heat and humidity have on our outdoor activities.

As a veteran of cycling with over 60,000 miles over the past 16 years, hydration and keeping cool have been important considera-

tions. Most rides have been without incident; however, on some occasions even careful planning will not prevent dehydration from occurring. Here are some important tips that might make summer exercise and play efforts more safe and enjoyable.

Hydration – Hydration is the most important factor to consider, and is not as straight-forward as simply drinking water after becoming hot and thirsty. Sports nutritionists recommend intake of diluted sports drinks, such as Gatorade or Power Aide, for as much as one to two days before a hard endurance effort. This helps the body store important electrolytes that are lost during profuse perspiration. Of course, these should also be consumed during the effort for sustaining fluid and electrolyte levels as well as after the effort to promote recovery.

How much should a person drink? While it varies according

(Continued on page 7)

CONTINUING EDUCATION: A BIG PAY-OFF FOR EVERYONE

By Denise Thurston



Recently there was an article on the top 25 technological breakthroughs in the past 25 years. Life sure isn't slowing down or going backwards. While number one on the list was "Wireless World" and number two was "Defense Technology", believe it or not, number five was the "availability and use of the computer in daily life". Looking back on my career in Engineering, it is amazing how it has changed over the past 25 years from hand drafting to Computer Aided Design.

When I began working in the Engineering industry, almost all plans and drawings were produced by hand drafting. The first computer I worked on was in the accounting department at a Water and Sewer Utility Company.

Before computers evolved in Engineering, hand drafting, calculators, T-squares and triangles were the tools of the trade. A Leroy tool was used for more standardized

lettering. Repidigraph ink pens, vellum paper and electric erasers were a necessity of life for a draftsman. Computers did not become a mainstay in Civil Engineering firms until the early 1990's when AutoCAD really took off. As a young draftsman, learning AutoCAD was necessary in order to do my job more efficiently and professionally. Hand drafting had become obsolete. Computer Design was now the means for advancement in the engineering profession. This new wave of computer drawing would help create a product that has now evolved from time consuming, stylized drawings to a more accurate and faster finished product for the client. It was a win-win situation for both the engineering company and the clients who needed our expertise.

A drafting career opportunity was now open to anyone who could learn to use a computer and had the desire to work in the engineering field. Computer drafting is a good way to develop a career - not simply a job. If an employee is happy with what they are doing, then the company will benefit from reduced turnover leading to

longer-term employment which, in turn, requires less repeat training and creates an overall better atmosphere for both the employee and employer. Learning new technology helps everyone involved.

There are two big pay-offs from computer education: not only improving one's efficiency and productivity, but also opening the doors to new opportunities for advancement for the employee. Throughout my career, I have seen many computer savvy draftsman/technicians take their career a step further to become Designers and even Engineers.

In the past 25 years, I have taken numerous courses on different applications, either via in-house instructors or classes set up through the Autodesk companies. Each time I have come away with new knowledge on how to be more efficient and productive. It helps the client and the employee to know that their employer is eager for them to stay current with technology that will benefit all parties. There are often advantages working in a larger com-

(Continued on page 6)

CHASTAIN-SKILLMAN EXPANDS ORLANDO OPERATIONS

In response to strong growth in the east central Florida region, Chastain-Skillman has expanded our Orlando operations to provide a full array of civil and environmental engineering services. Under the direction of Dr. Timothy Varney, PG, MPH, Chastain-Skillman's Longwood office was originally established in 2001 to provide environmental and occupational health (EOH) services to existing clients in the east central Florida area. Additional EOH staff was added in 2002 in response to the demand for these services.

In January 2004, Mark Addison, PE was re-assigned to the Longwood office in order to better serve the expanding needs of our growing client base. Mark is a registered engineer in Florida and New Jersey and has over 22 years of experience in civil/environmental engineering and land use planning. His degrees include a Bachelor of Science and Master of Science in Civil Engineering from the New Jersey Institute of Technology. An 11-year resident of Osceola County, Mark previously served as Utilities Director for the City of St. Cloud and is currently serving as Chairman of the Osceola County Board of Adjustment.

The Longwood office was re-located to the Lake Pointe Business Park in Orlando in May 2004. Since that time, the engineering staff has grown to further enhance the ability to provide comprehensive professional consulting services to our Orlando clientele. Recent additions to the staff include Paul Kellogg, Senior Project Manager, and Clarissa Park, Senior Draftsperson. Paul has over 8 years of civil engineering/site planning experience in the Orlando area and has worked on projects ranging from the City of Sanford's River Walk Project to the 4,800-unit mixed-use Providence DRI in Polk County. Clarissa is from Austin, Texas and has over seven years of civil drafting experience.

The Orlando staff is currently providing civil and environmental engineering services for a variety of public and private sector clients, including the Sand Hill Road WRF Phase 3 Expansion and Retrofit Project for the Toho Water Authority in Kissimmee. With a construction cost of approximately \$17 million dollars, the Sand Hill Road WRF project will expand the facility from its current 4.8 MGD capacity to 7.5 MGD capacity. The project is being fast-tracked to accommodate construction of the S.R. 429 Beltway by the Turnpike Enterprise, scheduled to be completed in early 2007.

Other current projects include a new 750-student K-5 elementary school in south Lake County, a 700-student middle school addition in Orange County, and two PUID's in Polk County. In addition, the Orlando staff is working with the Polk County Utilities Division on a number of CIP projects in northeast Polk County, including major utility improvements in the CR 54 corridor.

(Education—Continued from page 5)

pany, such as the ability to network with and use the support of other employees to resolve a problem that may occur when using the new technology. Chastain-Skillman has several I.T. specialists who are constantly researching and instructing us on means of increasing our efficiency.

A great company to work for is definitely one that enhances its employee's abilities to stay current with technology and advancements. At Chastain-Skillman, this is standard procedure, such as the recent upgrade this year to AutoCAD 2005. Each time the system is upgraded, there is always some advancement either in technology or user friendly ways to accomplish tasks with the program. In the techno-world, that is called "functionality". Here are just a few ways that AutoCAD has been upgraded:

- Managing projects more efficiently.
- Creating a Legal Survey Plan by using point object settings.
- Importing an ASCII point file.
- Labeling parcels more easily.
- Creating a Topographic Survey Drawing by building Terrain Surfaces.
- Being able to put in surface break lines in the Surface Terrain models.
- Creating proposed contours from existing elevations.
- Setting up a conceptual plan drawing-laying out subdivision roadways.
- Generating an alignment stakeout report.
- Preparing parcel boundaries.
- Solving complex parcel layout problems.

These are just some of the more advanced operations of AutoCAD 2005. Depending on the needs of your project, numerous

additional advanced operations exist. Besides instructional manuals and learning from the help menu on the computer, a draftsman can take courses either through instructional classes or develop an inter-office support system like that of Chastain-Skillman. Another great aid to learning new programs is to have the Tutorial Avi Player installed on the computer so, when faced with a new challenge to use one of the programs in AutoCAD 2005, the draftsman can listen to a CD and get a private lesson via his/her own computer.

Over the past 25 years, I have seen many changes in the tools of the trade and how I continually have to stay current with the technology or be left behind. The changing role of a draftsman is now becoming more of a designer with increasing opportunities to create and have input in the final product. As a designer, I have continually worked to visualize and edit proposed site developments to enhance, beautify and environmentally protect the land while also meeting the client's intent with the final result. Qualified technicians and designers are in high demand and the engineering community benefits from companies who support the school systems and help make meaningful training more readily available to students interested in exploring a career in Engineering and Design.

Yes, I and other designers and technicians at Chastain-Skillman are still taking classes and learning something new every day. Having just completed the official training course for Autodesk Land Desktop 2005 with four fellow employees, we have now increased our proficiency in site design. One of the most powerful programs to have come out of AutoCAD is the Model Terrain program. This program now allows the designer to perform tasks such as preparing grading plans, cross sections and

profiles, that previously took many days and sometimes weeks to complete, in a much shorter period of time. Not only has new technology decreased design time on a project, possibly more importantly it has also generated the ability to efficiently consider alternative designs during the conceptual phase of a project which previously would not have been feasible.

A helpful resource website is www.landnut.com, which has Land Desktop 2005 videos and books available for purchase as well as a link to "Ask Professor Landnut". This website has a computerized professor who will provide step-by-step instructions for performing an action in AutoCAD. The programs can be purchased or can be accessed from the website, allowing questions that pertain to a specific need or providing means for taking classes online.

I have come to realize over these past twenty-five (25) years that change and continual education have become an integral part of a successful drafting and engineering career.

Each day provides new challenges to create something new or improve what we already know. Knowledge, creativity and efficiency are the keys to successful companies and continuing education provides the avenue to achieve these goals.

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Resource from CNN. Com
Article on Technology
Top 25: Technological breakthroughs
Date: Monday April 11, 2005

If you have an interest in land use, water use planning, or a connection between the two, carefully review the authorized legislation originating from Senate Bill 444. This broad ranging bill will impact how Florida water, and therefore land use, is managed in the future. Development, regulation and prioritization of water supplies and associated water use permits will be affected as the state wrestles with how to serve growing population demands and protect the environment. For those owning property which drains into "impaired" waters as identified under the Florida's TDML program, special attention to the Basin Management Action Plans (BMAP) would be warranted to gauge impacts on property values. Members of our Water Resources group will be discussing these and many other the topics in more detail in future editions of Chastain-Skillman's Consultant's Update...so stay tuned.

(Heat Tips—Continued from page 4)

to the effort, personal rate of perspiration and the conditions, a rule of thumb is to drink a minimum of one bottle (about one liter) of fluid per hour. This standard minimum could be applied to any sport.

When should a person drink? Hydration needs to be constant. Don't wait until thirsty. Studies have shown that the human body performs at significantly lower levels of efficiency as it becomes dehydrated. Common sense tells us that if we deplete the fluids in our body, and thus in our blood stream, the work of carrying oxygen and nutrients throughout our system will be significantly impacted in a negative way. Some athletes set alarms on their watches or bicycling computers to remind them to drink at pre-set intervals. During group efforts another reminder is that when seeing another participant drinking, go ahead and take a sip yourself. It is probably needed.

Water vs. Sports Drinks – It is absolutely essential to replace lost electrolytes. Those “salt” stains on hats or clothing after a hard effort indicate the significant amount of electrolytes lost via sweating. For efforts of 30 minutes or less in duration, pure water is fine. When exceeding the 30 minute threshold, it is prudent to replace not only lost fluids but important electrolytes and carbohydrates (for energy) also. In fact recent studies have warned of the extreme danger during ultra-endurance events (six hours or longer) of drinking only pure water or sports drinks that do not contain adequate amounts of sodium. This can actually enhance the imbalance of electrolytes in the system and can become so dangerous that it can even cause seizures or death. For more information on this condition known as hyponatraemia, visit <http://www.sportsinjurybulletin.com/archive/ultra-endurance.html>. If not a fan of sports drinks, or if they are just too sweet-tasting during a hard effort, experiment with diluting them to a concentration that is preferred. Most importantly, carry something that tastes good to you. If you don't like the taste, chances are you won't drink enough during your exercise effort.

Other Nutrient Tips – Personally, I have found I achieve a higher level of performance and feeling of alertness when I consume a Potassium and a Calcium supplement either the night before or the morning of a big effort on a hot day. (Consult your physician before consuming any supplement). Potassium is a critical electrolyte for the proper functioning of the nervous system, and Calcium has been shown to aid in the prevention of muscle cramping. Some individuals nibble on Tums during a ride as a source of calcium. Orange slices and bananas are also a good source for Calcium. As testament to the importance of Potassium, I found myself in the back of an ambulance about 40 minutes after completing a nine hour cross-Florida ride. No amount of water or sports drink could bring me out of the horrible feeling of sickness I was experiencing after the ride. In the ambulance, they administered an IV with what they called “extra Potassium”. Quite literally, within two minutes of the insertion of the IV, I

went from a state of near delirium to feeling like I could jump out of the ambulance and ride another 20 miles. Really! I had been consuming liter after liter of liquid in an attempt to recover, but my Potassium level was so low that I was actually feeling worse the more I drank. The IV restored the critical electrolytes.

Hot Day Clothing – Today's exercise enthusiasts have a significant advantage over those of even a few years ago. Many materials are available now that not only feel light on our body, but actually assist in cooling the body. This may seem impossible, but it's true. Materials today are engineered in such a way that they actually pull moisture away from the body (wicking) to the outer surface of the material, to promote its evaporation. Of course the evaporation of perspiration is the body's natural mechanism for cooling, so anything that aids this process helps us stay cool. As opposed to the old standby cotton shirts and shorts, this also prevents us from having to carry around clothing made considerably heavier by the moisture it would be holding. Check out some of these types of clothing. Even fishermen are taking advantage of such wicking materials in the clothes they wear.

Carrying Liquids – Runners have the most difficult time with this, as it is inconvenient and uncomfortable to carry enough bottles for a long run or walk. There are some waistband devices on which to strap water bottles. I also know a distance runner that used to place bottles along his course before embarking on his run. While inconvenient, it works. Of course you'll want to find some convenient hiding places so as not to invite “opportunists” to find and take your bottles. Cyclists and walkers/hikers can take advantage of bladder devices often known as “Camelbacks”. They can hold as much as 100 oz. (three liters) of liquid. Most are insulated, keeping liquid ice cold for several hours. For long efforts, I frequently stuffed my Camelback with ice and fluid and kept it in the refrigerator overnight, so it was ready to go in the morning. A side benefit is that the ice in the pack helps keep your back a bit cooler as well. Learn more by searching the internet for “hydration back packs”.

To summarize, drink before, during (at least one liter per hour), and after your efforts. Don't depend on pure water for efforts of over 30 minutes in duration. Consume a sports drink to replace critical electrolytes. Take a sip of water at regular intervals, and err on the side of consuming too much liquid rather than too little. A good way to gauge whether drinking enough during exercise is to weigh immediately before and after the effort. If the weight is the same, fluids were replaced correctly. If it is less, drink more fluids next time out. Before long you can have your personal fluid intake formula calculated for safe and fun efforts in the heat and humidity.

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This newsletter is provided solely for informational purposes and presents only highly condensed summaries relating to the topics presented. Therefore, it should not be relied upon as a complete record for purposes of regulatory compliance, nor is it intended to furnish advice adequate to any particular circumstances. For additional information on any of the topics in this newsletter, please contact the author, or Allan Duhm, (863) 646-1402, or e-mail us.

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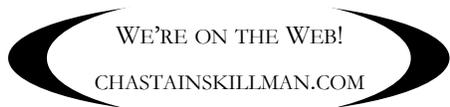
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