Epi Notes

North Carolina Department of Health and Human Services ◆ Division of Public Health

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In This Issue:

Clandestine Methamphetamine Laboratories Update

Prepared by C. Marilyn Parker, Industrial Hygiene Consultant, Occupational and Environmental Branch

Background

In 2001 there were 34 clandestine methamphetamine laboratories discovered in North Carolina; in 2003 there were 177 labs discovered. As of November 24, 2004, twenty-eight labs have been seized in North Carolina this year. The growing use of the Internet, which provides access to methamphetamine "recipes," coupled with increased demand for high-purity product, has resulted in a dramatic increase in the number of "mom-and-pop" laboratories throughout the United States. These labs pose multiple dangers to both public health and the environment. Methamphetamine labs can be located almost anywhere. Common lab locations include: inside vehicles, motor homes, neighborhood homes, rental storage units and motel rooms. Most labs in North Carolina have been found in private residences. Some of these homes have small children living in them and exposures to chemicals have caused medical problems including respiratory symptoms in the children. Several "lab busts" have required neighborhoods to be evacuated due to explosion dangers associated with the labs.

Methamphetamine can be easily manufactured in clandestine laboratories (meth labs) using ingredients purchased in local stores. Over-the-counter cold medicines containing ephedrine or pseudoephedrine and other materials are "cooked" in meth labs to make methamphetamine. A clandestine laboratory operator can use relatively common items, such as mason jars, coffee filters, hot plates, pressure cookers, pillowcases, plastic tubing, and gas cans to substitute for sophisticated laboratory equipment.

Properties used to produce methamphetamine will usually be littered with containers of chemicals such as ether, paint thinners, phosphorus, acids and bases, or anhydrous ammonia. Other lab equipment, cooking or storage containers, or heat sources may also be present. Typically, a United States Drug Enforcement Administration contractor removes the bulk of any lab-related debris such as chemicals and containers after a lab is discovered by law enforcement. However, smaller amounts of chemicals may have contaminated surfaces, drains, sinks, ventilation systems and absorbent materials (couches, carpets, beds etc.). The meth lab contaminants may pose serious health threats to persons exposed to them.

For information about methamphetamine and hazards associated with clandestine methamphetamine labs see the article by Sherry R. Giles in the Sept-Nov 03 (Vol 2003-3) EpiNotes. http://www.epi.state.nc.us/epi/pdf/en2003-3.pdf.

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*(**Meth Labs Update**, continued from page 1)*

Occupational and Environmental Epidemiology Involvement
It is necessary to adopt rules in order to establish decontamination standards that will ensure properties used as methamphetamine laboratories are rendered safe for habitation as required by legislation (SL2004-178 (S1054) G.S. 130A-284) enacted in the last General Assembly. Temporary rules were adopted on November 30, 2004 by the Commission for Health Services and were approved by the Rules Review Commission on December 16, 2004.

The Occupational and Environmental Epidemiology Branch (OEEB) has been working to address concerns associated with former methamphetamine labs. The State Bureau of Investigation issues a letter to property owners and the local health departments when a lab is seized. This letter serves as a warning that there may be hazardous substances and waste products left at the property. Rules have been written by OEEB and approved for the purpose of decontamination and re-occupancy of these properties to ensure the protection of public health. The OEEB is also writing a companion guideline document which will be completed by the end of the year.

The rules require decontamination of properties prior to re-occupancy. The property owner can conduct this decontamination process. However, the use of a cleanup contractor is advised. The following requirements are some highlights of the rules:

- Submittal of a Pre-Decontamination Assessment to the local health department
- Disposal of appliances (such as refrigerators, stoves, hot plates, microwaves, toaster ovens, and coffee makers, etc.) used in the manufacture of methamphetamine or storage of associated chemicals
- Disposal of non-machine washable porous materials, such as upholstered furniture and mattresses
- Removal of all carpet and padding
- Cleaning, painting and/or removal of non-porous materials (walls, ceiling, floors)
- Removal of excessively stained plumbing fixtures

Currently there is no requirement for sampling or testing to assure the effectiveness of the decontamination efforts.

Permanent Rules
In accordance with G.S. 150B-21.2 the Commission for Health Services intends to review the proposed Decontamination of Property Used for the Manufacture of Methamphetamine Rules for adoption as permanent rules with an effective date of April 1, 2005. The Commission for Health Services will hold its regularly scheduled meeting on February 16, 2005. The time and location of this meeting have not yet been determined, but persons wishing to attend this meeting can contact the OEEB (919-733-0820) for that information after February 1, 2005.

The public comment period is November 15, 2004 through January 14, 2005. During this time written comments may be submitted to Chris G. Hoke, JD, 1915 Mail Service Center, Raleigh, North Carolina 27699-1915. A public hearing was held on December 2nd in Raleigh, North Carolina. Any information or comments submitted will be considered during the rulemaking process. The Commission for Health Services is scheduled to consider the rules for adoption on February 16, 2005. The Rules Review Commission will consider them for approval on March 17, 2005 with an effective date of April 1, 2005.

It is very important that all interested and potentially affected persons, groups, businesses, associations, institutions or agencies make their views and opinions known to the Commission for Health Services through the public hearing and comment process, whether they support or oppose any or all provisions of the proposed rules. The Commission may make changes to the rules at the commission meeting if the changes comply with G.S. 150B-21.2(f).

Sources
- http://www.whitehousedrugpolicy.gov/publications/factsht/methamph/index.html
- http://www.usdoj.gov/dea/concern/drug_trafficking.html
- http://www.deq.state.ok.us/LPDnew/MethLabs/meth.html ▲

Legionellosis Outbreak in Cherokee County, North Carolina

Prepared by Will Service, Industrial Hygienist, Office of Public Health Preparedness and Response & Mark Smith, PhD, Epidemiologist, Public Heath Regional Surveillance Team 5

In early October, 2004 the Cherokee County Health Department reported a cluster legionella pneumonia (LP) at a local hospital/long term care facility. The Division of Public Health called in support from the Centers for Disease Control and Prevention (CDC) to conduct the investigation of the outbreak. Staff from the Office of Public Health Preparedness and Response (PHP&R) and from Public Health Regional Surveillance Teams (PHRST) five and six assisted the local health department staff and CDC with the investigation. This report focuses on those portions of the investigation that involved support of the PHRST and PHP&R team including the environmental investigation, case finding operations and assisting with implementation of incident command structure.

Background
Seven cases of LP were eventually identified in this outbreak, two of which were fatal. Sporadic cases of LP are reported every year in North Carolina. However, this was the first reported outbreak in the state in more than ten years. The infectious agent, Legionella pneumophilla, is a bacterium that can be commonly found in soil and water in the outdoor environment. Outbreaks of legionellosis have been reported worldwide when the organism becomes amplified in man made water sources such as potable hot water systems and evaporative cooling towers. When contaminated aerosols (water droplets) from those sources are inhaled, infection can occur, particularly among individuals with weakened immune systems.

Environmental Investigation
Many nosocomial outbreaks have been attributed to contaminated hot water systems in hospitals and nursing homes. As a result, the initial focus of the environmental investigation was on the hospital hot water system and sources of droplet aersolization from the

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Outbreak of *E. coli* 0157:H7 at the North Carolina State Fair - 2004

Prepared by Grant Goode, EIS Officer,
General Communicable Disease Control Branch

An outbreak *E. coli* O157:H7 associated with visits to the North Carolina State Fair occurred in North Carolina during October and November, 2004. After receiving reports of hemolytic uremic syndrome (HUS), a severe complication of *E. coli* O157:H7 disease, among State Fair visitors in late October, the North Carolina Division of Public Health recognized the that potential for a large exposure because hundreds of thousands of people visit the fair.

A major investigative effort with assistance from federal, state and local public health partners began. We received reports of over 180 case-patients during case finding. Many reported fair visits and contact to animals in petting zoos. Over half of all case-patients were five years old or younger. Fifteen children had HUS. HUS typically develops in approximately eight percent of all *E. coli* O157:H7 cases. The average age of HUS cases in this outbreak was three years, with a range of one to thirteen years.

As new case-patient reports trended downward, we classified 108 of the reported cases as fair outbreak-related. We designed and performed a case-control study as well as an environmental investigation at various locations at the fairgrounds. Our leading hypothesis was that contact between animals and case-patients at petting zoos at the fair led to infection. However, we carefully avoided biasing the study toward petting zoo exposures by including questions about eight other animal exhibit areas as well as the fair's two petting zoos. We included questions about well-known *E. coli* O157:H7 vehicles, e.g. undercooked hamburger or fresh apple cider. We enrolled 45 confirmed or probable cases, and 188 controls selected to match the distribution of case-patients' age groups.

Initial analysis showed many activities in the Crossroads Farm Petting Zoo were associated with illness. Among children younger than 3 who visited this exhibit, case-patients reported contact with manure more than controls (Odds ratio= 7.5; 95% Confidence Interval 1.9-30.1; p = 0.005). Cases also reported spending more time in this exhibit than controls (median times of 20 and15 minutes, respectively).

Crossroads Farm Petting Zoo had implemented guidelines from a national public health veterinarian group to encourage hand hygiene to protect visitors from illness. Signs and hand sanitizing stations, while present and reportedly used, did not protect against infection. It is notable that *E. coli* O157:H7 has a very small infectious dose.

Lab results from case-patients and environmental samples supported the case-control study's findings. 33 case-patients had indistinguishable Pulsed-field gel electrophoresis (PFGE) patterns. Samples from the Crossroads Farm Petting Zoo site grew *E. coli* O157:H7 with this same PFGE pattern. Most of these samples were from areas where people had direct contact with animals in the petting zoo.

Clinical, environmental, and case-control study findings imply that 80% of outbreak case-patients became ill after exposures in Crossroads Farm Petting Zoo. Other case-patients likely became ill after exposures elsewhere. In light of these findings, we recommend restricting direct contact with animals in petting zoos—particularly for young children and others with increased infection-associated risks, reducing fecal contamination, and reducing crowding.

Further analysis of data collected in this investigation may require revision of these findings and recommendations. ▲

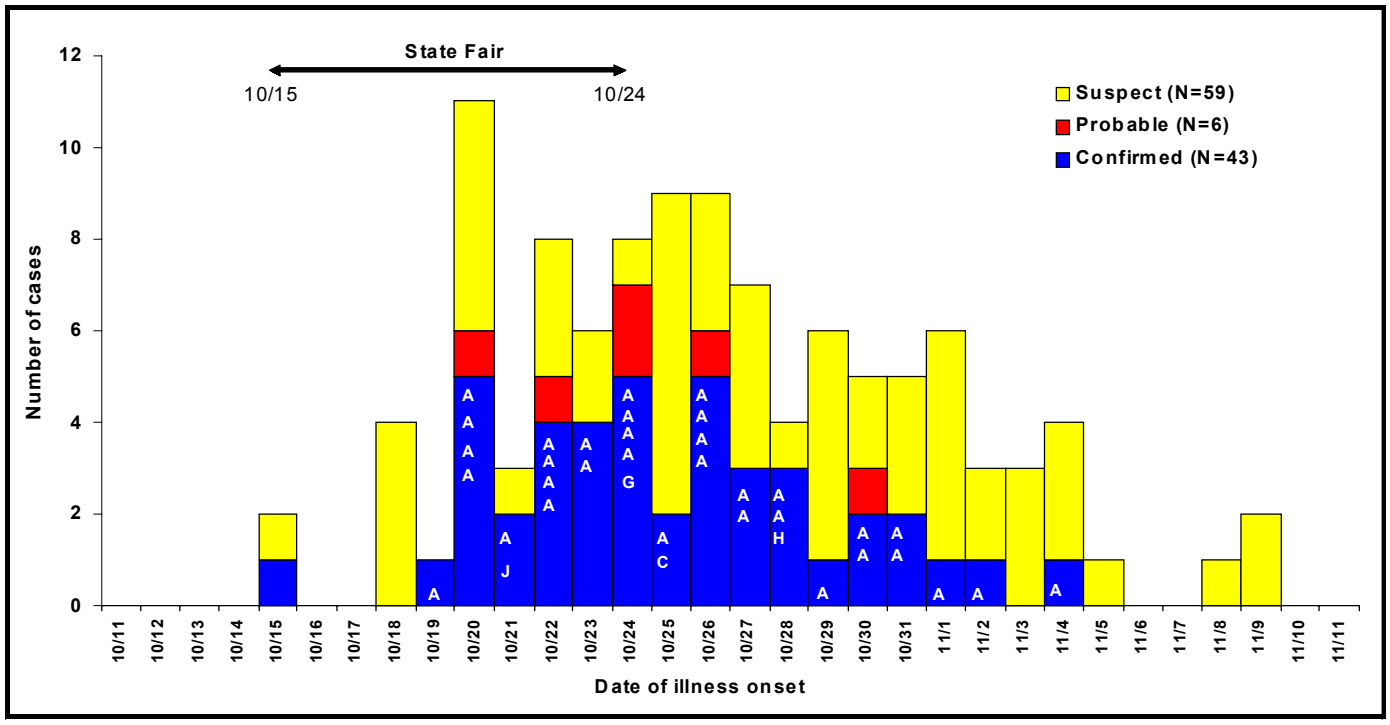

Figure 1. Dates of illness onset, *E. coli* O157:H7 Outbreak, North Carolina, October-November, 2004. The letters A, C, G, H and J reflect unique PFGE patterns.

Responding to an HIV Crisis…North Carolina Men's Health Initiative

Prepared by Phyllis Gray, Project Manager, HIV/STD Prevention and Care Branch

Through analysis of data generated by its acute HIV testing program, North Carolina recognized and rapidly described the beginning of an HIV outbreak among young adults and college students who were primarily black men who have sex with men (MSM). A review of HIV reports for all men ages 18-30 years diagnosed from January 2000 to May 2003 verified that there had been an increase in HIV case reports in male college students from 2 cases in 2000 to 56 between January 2001 and May 2003. Of these cases, 49, or 88%, were black and nearly all reported having sex with men or having sex with men and women. To date, some 88 cases have been identified.

In August 2003, the NCDOH invited CDC to assist with an epidemiologic investigation of this outbreak and to develop appropriate prevention/risk reduction strategies targeting this population. This collaborative investigation found that less than half the men in the study pool identified themselves as homosexual while a third of the respondents reported having unprotected receptive anal sex. Nearly a third of the college students interviewed reported meeting their sexual partners on a college campus, but the majority of the HIV positive men reported meeting their sexual partners at gay nightclubs and over the Internet.

North Carolina's acute HIV testing data and the findings from CDC's Epi-Aid clearly indicate an urgent need to design a targeted effort to promote risk reduction in a language and manner that is acceptable to young black MSM/Ws who are 18-30. Unfortunately, few epidemiologic and behavior studies have been conducted with African American men as the primary target. And for southern, largely rural states, with large African American populations like North Carolina such studies are almost nonexistent. The lack of studies translates into the absence of effective evidenced-based prevention strategies, which further translates into an inadequate public health response to eliminating a racial health disparity.

In July 2004, North Carolina received supplemental funding from CDC to undertake an 18-month community level demonstration project targeting African American men 18 to 30. The project – the Men's Health Initiative - will implement a tested HIV prevention model - the Popular Opinion Leader (POL). POL has been empirically determined to be effective in reducing HIV-related sexual risk for men who have sex with men (MSM) and also patronized gay bars[1] [2] and ethnic minority women who lived in urban low-income housing. The Popular Opinion Leader model is also included in the Compendium of HIV Prevention Interventions with Evidence of Effectiveness.

Although POL as a HIV prevention strategy has proven effective in reducing HIV risks, its efficacy in preventing HIV transmission for young, African American, college-age men who have sex with men has not been empirically determined on a large scale. Therefore, the goal of North Carolina's MHI project is to adapt the strategy where necessary and evaluate the utility of POL in preventing HIV specifically for African American men in three urban centers in North Carolina – The Triangle, The Triad, and Charlotte. Additionally, the model will test the efficacy of HIV prevention on a college campus, with North Carolina Central University as the test campus. On the university campus, all men will be targeted irrespective of sexual orientation.

This intervention is based on the diffusion of innovation theory with the premise that behavior change in populations can be initiated and then will diffuse to others if enough natural and influential opinion leaders within the population visibly adopt, endorse, and support an innovative behavior. In the case of HIV prevention, this behavior change includes condom use and avoidance of high-risk sexual activities. It offers a unique, low cost strategy to recruit and train prevention messengers who will effectively endorse the prevention message and influence behavior changes and prevention practices among peers.

To implement the project the Division of Public Health's three community partners and the university will: (1) use ethnographic techniques to identify popular and socially influential members of the target population, (2) recruit and train these individuals in how to communicate HIV risk reduction endorsement messages to peers during everyday conversations, and (3) work with the POLs once trained to sustain their HIV prevention advocacy activities.[3]

To evaluate project outcomes, POLs will be trained to use tracking forms to record the nature and scope of their risk reduction conversations, number of outreach encounters or contacts by POLs, etc. Quarterly surveys will be conducted in each venue where the intervention is implemented to assess individual and community level HIV risk reduction behaviors. The NC Division of Public Health will track changes in HIV testing behaviors and will visit STD clinics to assess changes in clinic level behaviors, such as increases in HIV/STD testing. ▲

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[1] Kelly, St. Lawrence JS, Stevenson, Hauth AC, et al., 1992 Community AIDS/HIV Risk Reduction: The Effects of Endorsements by Popular People in Three Cities. American Journal of Public Health. 1992: Vol. 82; 1483-1489.

[2] Kelly JA, Murphy DA, Sikkema KJ, McAuliffe TL, Roffman RA, Solomon LJ, Winett RA, Kalichman SC. Randomised, controlled, community-level HIV-prevention intervention for sexual-risk behaviour among homosexual men in US cities. Community HIV Prevention Research Collaborative. Lancet. 1997 Nov 22;350(9090):1500-5.

[3] JA Kelly (February 2004). Popular opinion leaders and HIV peer education: resolving discrepant findings, and implication for the development of effective community programmes. AIDS CARE, Vol. 16, No.2, pp.139-150.

*(**Legionellosis Outbreak**, continued from page 2)*

hot in the hospital. Sixty water samples were collected from outlets including water taps, showerheads, therapy tub jets, and miscellaneous sources including a decorative fish tank. The samples were analyzed by the CDC Respiratory Diseases Branch Laboratory. All hospital samples were negative for the presence of Legionella bacteria. As the negative results began to come in, investigators began looking more closely for sources outside the hospital.

Evaporative cooling towers have been associated with numerous community outbreaks of LP. The only tower identified within ½ mile of the hospital was at a manufacturing facility across the street. The tower, which provides air conditioning to a manufacturing floor, is located just over 300 meters from the hospital. All six water samples collected from the cooling tower were positive for the presence of Legionella pneumpohilla. Additionally Legionella DNA was identified in a sample that was collected from an air intake filter on the roof of the hospital.

These environmental data paired with information from the epidemiologic investigation investigation strongly suggest that the source of exposure for the hospital and long term care facility patients was the cooling tower at the nearby manufacturing facility.

Weather may have played a role in this outbreak as well. Epidemiological data suggest that most of the case patients may have been exposed during a period of time when hurricanes Frances and Ivan were rolling through that western portion of the state. Legionella bacteria die off very quickly in dry environments. High winds and high relative humidity, both characteristic of tropical storms, could have allowed the airborne bacteria to be transported, while still viable, over greater distances than would normally be expected. This is could explain why this outbreak occurred at this time, and has not before, though the evidence is certainly not conclusive.

Case Finding

Enhanced surveillance for detection of previously unidentified cases was conducted by chart review in the hospital and by community case finding. Community case finding included interviews of employees of the manufacturing facility, and door to door interviews of individuals living in homes near the facility cooling tower.

The occupational component of community case finding was conducted over two days. Questionnaires were administered to 200 of approximately 230 manufacturing facility employees working three shifts. Although several employees reported having been diagnosed with pneumonia during the 12 months preceding the interview, none of them had onset during a time that allowed them to be included as cases in the outbreak.

Questionnaires were also administering to citizens living in homes located within a half mile radius of the manufacturing facility. Interviewers went door to door and entered survey responses onto IPAQ hand held computers in the field. Data were downloaded from the IPAQS to a single laptop computer at a nearby staging area. Technical support was provided to the field interview teams by radio communication with a roving technical support team.

Interviews were conducted at 39 of 47 occupied households. Fifty-eight household members were interviewed in total. One individual reported having pneumonia during the period of time that

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Public Health Preparedness Aided by New Hospital-based Epidemiologist

Prepared by Jennifer MacFarquhar, NC Statewide Program in Infection Control and Epidemiology, UNC and Megan Davies, Medical Epidemiologist, General Communicable Disease Control

The North Carolina Division of Public Health (NC DPH) has contracted with leading healthcare systems in the state (comprising 65% of all emergency department visits) to fund public health epidemiologist (PHE) positions within hospital infection control programs. These positions focus on community acquired diseases or conditions and provide a dedicated link to local health departments. Major areas of responsibility for PHEs are performing active surveillance, both laboratory surveillance for reportable diseases, including Category A agents, and syndromic surveillance. They also perform education and outreach activities to increase clinician awareness of public health functions and serve as a liaison between their hospital systems and local health departments. This article describes PHE syndromic surveillance activities.

The PHEs use syndromic surveillance as a tool to select emergency department (ED) patients for routine active surveillance and case review. PHEs perform active surveillance on a daily basis for influenza-like illness, gastrointestinal illness, neurological illness, and fever/rash illness in the hospital ED population using case definitions based on the Centers for Disease Control and Prevention Working Group on Syndrome Groups. Eight of the eleven PHEs use electronic methods to process ED data, assign patients to syndrome categories, and perform case review. The remaining PHEs manually review ED logs and assign syndromes based on chief complaints. Each workday PHEs review ED records for each patient assigned to a syndrome. These electronic records include chief complaint, vital signs, and triage nurse notes. When indicated, further investigation includes reviewing physician notes, laboratory results, and radiology reports. One goal of this approach is to improve early detection of single cases of communicable diseases that might signal a bioterrorist attack or other public health emergency.

Each PHE reviews an average of 90 records per day, and performs further investigation upon half of these, or approximately 23% of ED patients. Among many interesting findings, PHEs have detected six patients with encephalitis, a cluster of Clostridium difficile colitis in residents of an assisted living facility, three patients with community acquired pneumonia (CAP) and exposure to poultry, a patient with unreported pulmonary Mycobacterium tuberculosis, and a case of community-acquired pneumonia in a patient who handles rodents. PHEs used surveillance for gastrointestinal illness syndrome to assist local health departments with case finding in the recent E. coli O157:H7 outbreak. Additionally, increased surveillance and communication initiated by the PHEs among hospital, laboratory, and public health has resulted in prompt notification and investigation of cases of salmonellosis, shigellosis, campylobacteriosis, pertussis, and Dengue fever.

PHEs have assisted in the performance of routine active surveillance and investigation. Through ED chart reviews, they identified cases and clusters of cases that merited further public health investigation, strengthening communication among clinicians, laboratories, and public health. ▲

NC Electronic Disease Surveillance System (EDSS) Update

Prepared by Allison Connolly, NC-EDSS Coordinator, General Communicable Disease and Control Branch

As mentioned in the last Epi Notes, I will provide a brief update on NC-EDSS in each issue.

- The NC NEDSS is now called NC-EDSS (North Carolina Electronic Disease Surveillance System), at least temporarily. We will be taking suggestions for a permanent name as implementation of the system gets closer.

- Many DPH staff working in various aspects of communicable disease surveillance and investigation are busy working with our contractor, STC, to finalize the requirements for NC-EDSS. The requirements will be finished by February 7, 2005.

- The Local User Workgroup has met four times. Tara Riley-Williams, NC-EDSS Project Manager, and I have been gathering ideas from members about what they would like from NC-EDSS and how training on the system should be conducted. The following local public health employees are members of the workgroup:
  - Ayotunde Ademoyero, Forsyth County Department of Public Health
  - Angela Allen, Greene County Department of Health
  - George Bond, Buncombe County Health Department
  - Rocky Bowen, Wake County Human Services,
  - Judy Butler, Orange County Health Department
  - Lorraine Houser, Mecklenburg County Health Depart ment
  - Ruth Lassiter, Wake County Human Services
  - Delores Nobles, Pitt County Memorial Hospital
  - Shirin Scotten, Wilkes County Health Department
  - Martha Salyers, PHRST 6
  - Susan Sheats, Robeson County Health Department

  If you have any comments or concerns about the NC-EDSS initiative, you may contact one of the members of the Local User Workgroup or you may contact me at 919 715-1642.

- Many thanks to everyone who completed the survey regarding training needs and preferences for NC-EDSS. A summary of the results will be included in the next issue. ▲

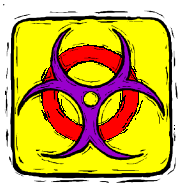
*(**Legionellosis Outbreak**, continued from page 5)*

would identify that person as a case patient. Further clinical evaluation of that individual is pending.

The cooling towers that were implicated in this outbreak have been inactivated and will be decontaminated prior to being put into service in the spring. No new cases have of LP have been identified, and enhanced surveillance for new cases at the hospital has been outlined. ▲

Hazardous Substances Emergency Events Surveillance (HSEES)

Prepared by Sherry R. Giles, MPH, Epidemiologist Occupational & Environmental Epidemiology Branch



The North Carolina Hazardous Substances Emergency Events Surveillance (NCHSEES) Program is an active, state-based surveillance system used to describe the public health consequences associated with the release of hazardous substances (chemical and biological). NC HSEES is supported by a grant from the Agency for Toxic Substances and Disease Registry (ATSDR). North Carolina is one of fifteen states in the program. Information about releases of hazardous substances that need to be cleaned up or neutralized according to federal, state, or local law, as well as threatened releases that result in a public health action such as an evacuation, is collected and analyzed. A HSEES event is defined as any release(s) or threatened release(s) of at least one hazardous substance. A substance is considered hazardous if it might reasonably be expected to cause adverse human health effects. Releases of only petroleum products are excluded from this system.

The objectives of the HSEES program are to reduce morbidity and mortality of employees, responders, and the general public as a result of hazardous substances releases; identify the risk factors associated with morbidity and mortality from the releases; and identify or develop prevention strategies that may reduce or prevent future morbidity and mortality associated with hazardous substances emergency events.

Hazardous substances emergency events are reported to the NC HSEES by several sources including: the NC Division of Emergency Management; the National Response Center; the Hazardous Materials Information System; the NC State Bureau of Investigation; and the media. Additional information is collected during telephone interviews conducted with emergency responders, including local emergency management coordinators, firefighters, hazardous materials team responders, and environmental affairs representatives in private industry.

During 2002-2003, there were 685 events investigated and entered into the database by the HSEES staff. Of these events, 318 (46.4%) occurred at fixed facilities and 367 (53.6%) were transportation events. NC is different from most HSEES states in that the number of transportation events is surpassing the number of fixed facility events. Causal factors for each release are collected. Human error is the leading primary factor, while improper filling or loading is the leading secondary factor in the cause of release. Most transportation events are ground transportation (89.6%). Rail transportation makes up 9.3% of transportation events and just over one percent of the events are water and air transportation combined.

Nearly 950 chemicals were released in these 685 events. Chemicals are grouped by category for reporting. Chemical categories are shown in Table 1. Approximately 10.1% of reported events required official evacuation orders of a total of more than 6,800 people. Two-hundred forty four people self-evacuated during these events. Only 0.4% of reported events had in-place sheltering orders. These 685 events resulted in 393 victims. Victims are defined as individu-

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Acute HIV-1 Methodology Change at the NC State Laboratory of Public Health

Prepared by J.T. McPherson, Supervisor, Virology/Serology Unit, NC State Laboratory of Public Health

Acute HIV-1 infection is occurring in at-risk populations but is predominantly undiagnosed because this phase of the infection occurs when antibodies to HIV are undetectable. With the exception of the blood bank industry, acute HIV screening is not part of routine testing because nucleic acid amplified tests (NAATs) for HIV are expensive and may have inadequate specificity for screening since HIV prevalence will usually be low. In 2001, the North Carolina State Laboratory of Public Health (NCSLPH), the HIV/STD Prevention and Care Branch, and UNC Chapel Hill formed a partnership and conducted a pilot study exploring the feasibility of multistage pooling of approximately 8300 HIV-1 antibody negative sera for evidence of acute HIV infection and successfully demonstrated the ability to detect HIV RNA in those sera (1).

The experiences with the pilot study enabled the NCSLPH to subsequently conduct prospective screening for acute HIV-1 infection in all 228,016 specimens received from roughly 115 funded counseling and testing sites (CTS) within North Carolina over a 24-month period beginning November 1, 2002. All patient sera were tested for HIV-1 antibody via an EIA test system. Aliquots of HIV antibody negative sera were subsequently processed in a multistage pooling algorithm. Pools of 90 to 96 sera (termed "B" pools) were initially tested by a commercial NAAT for the presence of HIV-1 viral RNA. Reactive "B" pools were deconstructed to their component smaller "A" pools, and then the reactive "A" pool was deconstructed to identify the reactive individual patient serum. Laboratory results were utilized to classify patients as either acutely infected or not infected only after patient notification, clinical follow-up, and repeat testing which yielded seroconversion by both the EIA and HIV-1 western blot methods.

During the first year of this program, pooling was accomplished with a Beckman Biomek FX Robot (Beckman/Coulter) and the NucliSens HIV-1 Qualitative Assay (bioMerieux) NAAT assay. During the second year of this program, pooling was accomplished with the Hamilton AT Plus robot with NAAT testing using the GenProbe HIV-1 Qualitative Assay. All equipment and kits were provided at no charge by the respective manufacturers for one year periods of time. The NCSLPH has recently secured funding from the General Assembly to sustain this testing program and is actively evaluating another NAAT assay since the bioMerieux NucliSens and GenProbe HIV-1 Qualitative assays are no longer commercially available.

Of the 228,016 sera screened for HIV-1 antibody, 224,108 sera had not previously tested positive and hence were at risk for HIV infection. 1502 sera (0.65%) were confirmed reactive by western blot; however, some patients tested HIV positive more than once. The HIV-1 NAAT assays detected an additional 40 patients with acute HIV infection. Approximately four percent of the HIV-1 infected patients were EIA antibody negative and would have been undetected without the use of NAAT methods. The HIV viral loads of these positive patients ranged from 2,609 to 4,998,154 copies per ml. Additionally, there were three false positive NAAT tests, resulting in an overall positive predictive value of 93%.

Approximately four percent of HIV-1-infected individuals who presented for routine HIV testing in North Carolina were initially missed because they had acute HIV infections. The successful two year partnership showed that multistage pooling can efficiently diagnose acute infection with good positive predictive value in low prevalence populations. This research shows that it is feasible for laboratories with high testing volumes, such as commercial and state public health laboratories, to perform widespread screening for acute HIV-1 infection. ▲

Reference

(1) Pilcher, C.D., et.al., JAMA, Volume 288/No.2, July 10, 2002.

*(**HSEES,** continued from page 6)*

als who experience injuries or report symptoms or go to a health care facility within 24 hours of the event. The most frequently reported injuries were dizziness or central nervous system symptoms, respiratory irritation, headache, trauma, and chemical burns. Most victims are treated and released from a hospital or are treated with first aid on scene, however, there were 34 hospital admissions and 12 deaths associated with these events.

Prevention outreach is an important part of the NC HSEES program. Each year four prevention outreach activities are completed and evaluated for effectiveness. Fact sheets have been developed for chemicals that cause the most injuries to people. The fact sheets are distributed to industries that use the chemical, local emergency management coordinators, fire marshals, and companies in the NC HSEES database that have released the chemical. A brochure was developed for first responders to increase awareness of chemical dangers present at illegal methamphetamine laboratories. Presentations are made to local emergency planning committees (LEPCs) to help them develop their own prevention strategies. Presentations are made at national meetings on topics such as HSEES Awareness, Fires and Explosions, Children Affected by NC HSEES events, etc. Poster presentations are made at state and national meetings on topics where outreach may help prevent future releases or prevent injury or illness from releases.

More information about the HSEES program and program publications are available at the web site,
http://www.schs.state.nc.us/epi/oii/hsees.html. ▲

Table 1

Chemical Category	Number
Acids	133
Ammonia	40
Bases	85
Chlorine	25
Formulations	2
Hetero-organics	20
Hydrocarbons	3
Indeterminate	5
Mixtures	19
Other	56
Other Inorganics	148
Oxy-organics	57
Paints	43
Pesticides	54
Polychlorinated Biphenyls	19
Polymers	45
Volatile Organic Compounds	189
Total	**943**

Accreditation of NC State Laboratory of Public Health Services

Prepared by Lou F. Turner, DrPH, Director, NC State Laboratory of Public Health

At the NC State Laboratory of Public Health (SLPH), both the clinical and environmental aspects of laboratory testing must undergo periodic evaluative assessments from federal certification or accreditation programs. The primary programs that evaluate the SLPH services include the Clinical Laboratory Improvement Amendments (CLIA), the Food and Drug Administration (FDA), and the Environmental Protection Agency (EPA).

The clinical aspects of the SLPH testing are certified under CLIA which is implemented by the Center for Medicare and Medicaid Services (CMS) in the federal Department of Health and Human Services (DHHS). The objective of the CLIA program is to ensure quality laboratory testing and regulates all laboratory testing (except research) performed on humans in the United States. In total, CLIA covers approximately 175,000 laboratory entities. To maintain certification, the SLPH must: register as a laboratory; meet all the requirements of the CLIA quality standards for proficiency testing (PT), patient test management, quality control, personnel qualifications and quality assurance; pay an annual certification fee; and undergo an on-site survey every two years. All clinical laboratories must be properly certified by CLIA in order to receive Medicare or Medicaid payments. The quality assurance (QA) activities at the SLPH have been greatly enhanced through each on-site inspection and as a recommendation from the last inspection in April 2003, the SLPH has created a new QA program including two dedicated QA positions. The SLPH is scheduled to undergo its next CLIA on-site survey in January 2005.

The environmental aspects of SLPH testing are certified either by FDA or EPA. Official accreditation of the milk laboratory at the SLPH requires that the appropriate federal (FDA) milk laboratory control agency conducts an on-site survey to determine satisfactory performance of an analysis in milk laboratories. An accredited milk laboratory must be an approved official milk laboratory (biological, chemical, or physical laboratory which is under direct supervision of the State or a local regulatory agency). Uniform accreditation of milk laboratories is maintained by the FDA certification of the State central milk laboratory analysis based on the Major factors: 1) satisfactory triennial on-site evaluation of the laboratory facility where the surveyor reviews the quality control and report records, facility, equipment, testing materials and reagents, and reviews the testing protocols; 2) each individual analyst's performance of techniques; and 3) the satisfactory annual proficiency testing to continuously appraise analysts' performance. The SLPH had its latest FDA on-site survey in October 2004 and was granted provisional certification pending the SLPH's response to the survey report.

All laboratories analyzing samples for the Safe Drinking Water Act (SWDA) must be certified by U.S. EPA or a designated state program. At the SLPH, we are certified by regional EPA staff. As a certified laboratory, the Lab must successfully analyze a set of performance evaluation samples at least annually for all regulated contaminants for which we wish to be certified, use approved methods, and must undergo and pass an on-site evaluation every three years. The most recent on-site audit was conducted in 2004 and the Lab was certified for all requested parameters. ▲

STARHS in North Carolina: An Overview of Proposed HIV Incidence Surveillance Activities

Prepared by Delbert Williams, PhD, Manager, Epidemiology and Special Studies Unit, HIV/STD Prevention and Care Branch and Penelope Padgett, PhD

Each year for the past three years, the North Carolina Division of Public Health has received an increased number of reports for persons with HIV/AIDS. For the calendar year 2003, there were 2,100 new individuals reported to the Epidemiology and Special Studies Unit. While these are presented as incident reports for 2003, most of these reports clearly do not represent incident infections for 2003. In most cases, we have no idea when a person was infected with the virus. We are often able to determine when the first positive test was performed and we may also have information related to the most recent negative HIV test before the patient's positive test. These two dates may suggest an interval during which a person was infected. For some clients, that interval may span two or three years. However, for persons who have not been previously tested, we have very little information to suggest how long they might have been infected.

In terms of prevention strategies, the evaluation of activities entails the necessity of monitoring the incidence of new infections. In January 2001, the Centers for Disease Control and Prevention's (CDC) HIV Prevention Strategic Plan was published and it set a goal of reducing the number of new HIV infections by 50% by 2005. The ability to measure new infections was not yet in place, however. Following additional expert consultations convened by the CDC in 2001, the decision was made to utilize a less sensitive Enzyme Linked Immunoassay (EIA) in conjunction with results from routine EIA testing to allow an estimate of recent HIV infections at the population level. This procedure, known as the serologic testing algorithm for recent HIV seroconversion (STARHS), was originally described by Janssen et. al. in 1998.

The STARHS algorithm utilizes two separate EIA assays. The first is a routine EIA with confirmation by Western Blot to identify patients with laboratory-confirmed HIV infection. For all patients who meet the STARHS inclusion criteria established (see below), a second less sensitive EIA (a modified bioMerieux Vironostika assay) is performed. The less sensitive EIA is one where the "detuned" assay is made less sensitive by using a higher serum dilution (1/20,000 compared to 1/400), a shorter specimen incubation period, and a higher cut-off point to be considered positive. If a specimen is tested using both assays (the standard and the detuned assay) and has a positive result in both; the person from whom the specimen was collected is presumed to have been infected for at least a year. However, if the specimen has a positive result using the standard EIA but then is nonreactive using the detuned assay, the patient is presumed to have been infected with the HIV virus for less than six months. Such specimens are often referred to as "detuners" or "STARHS negative" results. Therefore, a patient who is determined to be "STARHS negative" is one we would classify as a recent infection.

IN 2002, CDC funded five areas to pilot the STARHS method, and nineteen additional areas were funded in 2003. Ten new HIV Incidence sites were added in 2004, bringing the total to thirty-three

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*(**STARHS in NC**, continued from page 8)*

areas, currently funded for incidence surveillance. All of the southeastern states (plus the District of Columbia and Maryland) are funded for HIV incidence surveillance. The monitoring of HIV incidence will be critical in evaluating progress toward CDC's goal of reducing the number of new HIV infections in the United States. North Carolina received funding in 2004 to begin implementation of surveillance for HIV incidence. While the funding was made available as a separate project within HIV/AIDS surveillance cooperative agreement funding, monitoring new HIV infections is considered an activity included in our routine HIV/AIDS surveillance efforts.

The implementation of STARHS is still in the planning stages for North Carolina. There are a number of issues that have required resolution, but we are moving forward. One of the items still in process is the need for local IRB (Institutional Review Board) approval for the project. While surveillance for HIV incidence is considered a routine aspect of HIV/AIDS surveillance and therefore does not fall under the human subjects review requirement or a consent requirement by the subject, there is an interesting wrinkle with respect to the STARHS. The currently utilized detuned assay from bioMereiux has been licensed as an Investigational New Device (IND) by the Federal Drug Administration (FDA). As such, the detuned assay is not a diagnostic assay and results are not expected to be reported to the patient. There is also the requirement that informed consent be obtained if the result of the test is to be linked to an identified individual's surveillance data and that the local IRB approve the survey protocol. We anticipate that the informed consent form currently used by the local health departments for routine HIV testing will be modified slightly to include a check box for consent for STARHS testing and the accompanying brochure will have a section added giving an overview of STARHS.

Clients who are 18 years of age or greater and are HIV-positive using the routine EIA/Western Blot and have not previously been reported as HIV-infected are eligible for inclusion in the study. If the patient provided consent for STARHS testing at their pretest counseling session, the remnant serum will be aliquoted into multiple tubes and frozen. If seropositive, a Disease Intervention Specialist (DIS) will perform a routine patient visit and a short HIV testing history questionnaire will be administered. The need for the testing history is to identify how frequently and why persons seek HIV testing. If a person is identified as HIV-positive but did not consent for STARHS testing at their pretest counseling session, the question of STARHS consent will be revisited at the time of DIS interview. If the client provides consent at the time of the patient notification interview, their remnant serum will be aliquoted and frozen as previously described. If the client refuses STARHS testing, their serum will not be included in subsequent STARHS testing.

The North Carolina State Laboratory of Public Health (NC SLPH) will conduct the initial EIA/Western Blot testing. Following EIA and Western Blot testing, eligible and consented specimens for STARHS testing will be shipped to the regional STARHS laboratory, the Wadsworth Diagnostic HIV Testing Laboratory in Albany, New York. Turnaround time for client results for the local health department clinics should not be affected by STARHS testing because the results of the routine testing must be known before eligibility for STARHS testing is determined. Additional resources for the NC SLPH have been made available by the Cooperative Agreement funding such that the current laboratory staff will not have additional duties as a result of the project.

STARHS testing should not have an impact on post-test counseling activities conducted by local health departments as we anticipate the testing history questions will be collected by DIS at the time the client is interviewed. It is our intention to follow the FDA and CDC guidelines regarding returning results, therefore STARHS results will not be returned to the patient. The benefit will be at the population level, where we hope to be able to provide an estimate of the number of incident HIV infections. This project will not replace the Acute HIV Testing conducted by the NC SLPH, but is expected to enhance our ability to identify recent HIV infections in our state. Look for notifications about additional information in the form of mailings and PHITN presentations as we finalize our protocol and move into the pilot phase of the project. Questions may be directed to either Del Williams (919.733.9606) or Penny Padgett (919.715.1739).

References:

Janssen RS, Satten GA, Stramer SL, et al. New testing strategy to detect early HIV-1 infection for use in incidence estimates and for clinical and prevention purposes.
JAMA 1998;280:42–48. ▲

ICCE Net: Intrastate Crisis Communication Enhancement Network

Prepared by Bill Furney, Information Communication Specialist, Office of Public Health Preparedness and Response

During the first six weeks of 2005 the Office of Public Health Preparedness and Communication (PHP&R) will be conducting seven regional meetings to help local health departments establish Local Heath Information Teams. The effort is part of a new program titled the Intrastate Crisis Communication Enhancement Network – or ICCE Net.

Creating these county-level teams will help health and hospital public information professionals at the local level prepare for and manage public information during a catastrophic health event or an act of bioterrorism. Each regional conference will be conducted by the PHP&R Communication Coordinator and includes sessions on:

- Membership and Activities of the Local Health Information Teams
- The Role of the Public Health Regional Surveillance Teams
- The Health Alert Network
- Conducting a Bioterrorism Preparedness Assessment
- An Introduction to the CDC's Emergency Risk Communication CD-ROM Tool Kit

The overall objective of ICCE Net is to foster regular and structured meetings between and among professionals at the county, regional, and state levels who are responsible for managing public information during a catastrophic health event or an act of bioterrorism. PHP&R considers it essential that a program

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Reported Communicable Disease Cases, NC, January-December 2004 (by date of report)*

Disease	Year-to-Date (through 4th Quarter)			4th Quarter 2004	Comments / Notes
	2004	2003	Mean (99-2003)		
Campylobacter	**618**	839	616	**138**	
Chlamydia, laboratory reports	**28999**	26065	23395	**7223**	
Creutzfeldt-Jakob Disease	**1**	4	-	**0**	Note 1 & 2
Cryptosporidiosis	**76**	57	38	**12**	
Cyclosporiasis	**1**	2	0	**0**	
Dengue	**5**	3	2	**2**	
E. coli, Shiga toxin-producing	**152**	38	102	**128**	Note 3
Ehrlichiosis, Granulocytic	**10**	2	1	**3**	
Ehrlichiosis, Monocytic	**35**	28	15	**10**	
Encephalitis, LaCrosse	**13**	26	13	**6**	
Encephalitis, West Nile	**4**	19	-	**3**	
Foodborne, C. perfringens	**4**	2	10	**0**	
Foodborne, other	**532**	35	69	**90**	
Foodborne, staphylococcal	**9**	85	44	**3**	
Gonorrhea	**15198**	15085	16919	**3736**	
Haemophilus influenzae	**62**	41	37	**17**	
Hemolytic uremic syndrome	**2**	3	4	**2**	
Hepatitis A	**106**	126	180	**31**	
Hepatitis B, acute	**182**	163	219	**44**	
Hepatitis B, chronic	**757**	1022	788	**239**	
Hepatitis B, perinatal	**6**	4	-	**0**	Note 1 & 4
Hepatitis C, acute	**12**	13	23	**2**	
HIV/AIDS	**1641**	2100	1641	**362**	Note 5
Legionellosis	**40**	42	19	**11**	
Listeriosis	**26**	18	-	**10**	Note 6
Lyme disease	**123**	156	91	**31**	
Malaria	**23**	25	28	**6**	
Measles	**1**	1	0	**1**	
Meningococcal disease	**36**	37	45	**10**	
Meningitis, pneumococcal	**29**	25	42	**6**	
Mumps	**5**	2	5	**1**	
Psittacosis	**1**	0	0	**0**	
Q fever	**2**	2	1	**0**	
Rabies, animal	**581**	773	609	**95**	
Rocky Mountain Spotted Fever	**535**	331	208	**203**	
Salmonellosis	**1648**	1435	1391	**460**	
Shigellosis	**476**	1061	620	**234**	
Strepto. A, invasive	**125**	111	103	**25**	
Syphilis, total	**454**	396	852	**111**	Note 7
Tetanus	**1**	0	1	**0**	
Tuberculosis	**374**	374	428	**131**	
Toxic Shock Syndrome (TSS)	**2**	2	4	**0**	
TSS, Streptococcal	**5**	4	1	**3**	
Typhoid, Acute	**8**	9	4	**2**	
Vanco. Resistant Enterococci	**681**	570	473	**145**	
Vibrio, other	**15**	6	9	**5**	
Vibrio vulnificus	**6**	9	5	**4**	
Whooping cough	**101**	144	100	**34**	

*Preliminary data, as of 1/14/2004. Quarters are defined as 13-week periods. Only diseases with cases reported in the year 2004 are included in the table.
Notes: 1. Not reportable, or not reportable as such, in this entire time period; 2. Became reportable effective 4/1/2003; 3. Including E. coli 0157:H7 ("E. coli O157:H7" was disease name until 2/15/2003); 4. Coded as such since 2002; 5. Earliest report with HIV infection or AIDS diagnosis; 6. Reportable since 7/2001; 7. Primary, secondary and early latent syphilis.

*(**ICCE Net,** continued from page 9)*

be established to enhance the ability of those involved to better conduct and coordinate media and public information efforts before, during and after a crisis.

During a health crisis it is expected that a multitude of public and private agencies will participate in the response. It is imperative that the people from each sector responsible for coordinating public information establish lines of communication within and between the affected counties as well as the regions and the state before an event takes place. The more familiar everyone responsible for public health communications is with each other the more likely it is that vital information will be properly exchanged. To that end, it is vital that we develop solid connections with one another and take full advantage of information-sharing opportunities – and to avert information crises – as they arise.

The program is based upon the concept that in North Carolina there are three distinct spheres of health communication that must be addressed – intracounty, intercounty (regional), and the communication that takes place between counties, regions, and state offices (statewide). When viewed as a whole, they create an intrastate network of health, medical, and emergency organizations that need to communicate with each other before and during a health crisis. Working together in a structured system will enhance the communication abilities of both the individual groups and the network – thus the name Intrastate Crisis Communication Enhancement Network – or ICCE Net.

The most important link in this communication network is the county. Each county or health district will create a Local Heath Information Team (LHIT) comprised of those individuals who are responsible for coordinating media and public information efforts during a health crisis. The county health department's lead public information officer (PIO) will take the lead in creating these groups and scheduling regular meetings. The county's Public Health Regional Surveillance Team (PHRST) will provide oversight and guidance to the county PIOs to help them establish their groups and meeting times. The health department PIO will enlist the aid and partnership of the county's lead PIO or designated media coordinator at the beginning of this effort. (Although not all health departments have PIOs, most have either a BT coordinator, public' health nurse or a health educator who has received media facilitator training and/or has been designated the department's media coordinator. It is suggested that the meetings be held once a month and that they are held within or as close to the county's Emergency Operations Center as possible to foster interaction with this key office.

Each county or health district will, with the assistance of the PHRSTs and the PHP&R Communication Coordinator, create an Emergency Risk Communication Plan that establishes policies regarding the communication of health issues within the county and with other counties within the region. Such policies will establish lead spokespeople, approval of messages, message coordination with county and state agencies, message dissemination, media availability schedules, and other key communication elements. Once completed the plans will be submitted to the county's PHRST for review and coordination. If a county has an existing Emergency Risk Communication Plan they will submit their plan to the PHRST for review as soon as possible.

The local information teams also will use their monthly (or regularly scheduled) meetings to determine additional health communication goals and needs specific to their counties. The PHRSTs and PHP&R Communication Coordinator will help facilitate those goals as requested. ▲

Employee Recognition: Sandy White Employee of the Quarter

Prepared by Patsy West, Administrative Assistant, Epidemiology Section

Sandy White received the Epidemiology Section's Employee Recognition Award for the fourth quarter of 2004. Ms. White was nominated in the category of Service Excellence.

Sandy White began her career by joining the HIV/STD Prevention and Care Branch in 1994. In her role as administrative assistant I, Ms. White is responsible for processing all personnel actions for her branch including posting positions, ensuring accuracy of personnel packets by working closely with supervisors, tracking salary reserve, ensuring the accuracy of branch time sheets and more. In fact, Ms. White's excellent work in preparing personnel actions has been used many times as models in personnel training presented by the Division of Public Health's Human Resources Division. Some of her other duties include branch space planning, maintaining branch credit cards and surplusing outdated branch office equipment. She is dedicated to excellence in her work.

Ms. White takes great pride in her work and is always willing to go the extra mile. That is evident by the exceptional two-day orientation she developed and implemented for the HIV/STD Branch employees. The two-day event is a comprehensive, in-depth training session that is highly informative and loads of fun for the participants.

Ms. White's talents extend well beyond her daily duties as administrative assistant. She is notorious for her ability to plan and coordinate work functions such as retirement receptions, holiday celebrations and other gatherings. Her design talent is so well known throughout the Division, many times Ms. White is called on to lend assistance to other Branches with their special events.

In addition to receiving the Epidemiology Section's Employee Recognition Award, she was presented with a gift certificate to a local restaurant from the Epidemiology Section Management Team. ▲

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