TECHNOLOGY AND DEVELOPMENT PROGRAM

United States Department of Agriculture • Forest Service • 0971–2822–MTDC

TD NEWS

Number 1 http://www.fs.fed.us/eng/t-d.php 2009

Safety and Health

Guides for Forest Service Volunteers and Volunteer Coordinators

Volunteers perform a variety of valuable services on our national forests. Volunteer coordinators provide direction and define expectations that are reflected in the attitudes and performance of volunteers. The Missoula Technology and Development Center (MTDC) developed two guides to help volunteers and coordinators better understand their roles in creating a safe work environment.

"Welcome to the Forest Service: A Guide for Volunteers" (0967–2813P–MTDC) gives volunteers a brief history of the Forest Service, an overview of the volunteer program, and information on how to work safely and productively.

"Volunteers in the Forest Service: A Coordinator's Desk Guide" (0967–2814–MTDC) provides coordinators with examples of successful work practices used by experienced volunteer coordinators and summaries of the latest Forest Service regulations.

For additional information on the guides for volunteers, contact Lisa Outka-Perkins, project leader (phone: 406–329–3849, email: loutka-perkins@fs.fed.us).

Outer Garments That Keep You Safe

Forest Service construction and maintenance crews, survey crews, utility crews, emergency responders, and law enforcement personnel all have to work in the highway right-of-way.

A new Federal regulation (23 CFR Part 634) requires persons working in the right-of-way of interstates and U.S. highways to wear high-visibility outer garments. To meet the requirements of ANSI/ISEA 107-2004 American National Standard for High Visibility Safety Apparel and Headwear, Class 2 garments must have:

- At least 775 square inches of highly-visible colored fluorescent background material
- At least 201 square inches of retroreflective material that will bounce light directly back toward its source

Every Forest Service vehicle should carry at least two safety-compliant vests. High-visibility outer garments are not available through the National Interagency Support Caches at this time, but can be ordered from the General Services Administration (GSA) Advantage Web page at http://www.gsaadvantage.gov.

The tech tip "Be Seen: High-Visibility Outer Garment Required When Working in Highway Rights-of-Way" (0967–2311P–MTDC) includes a link to sources of safety-compliant vests and explains how to implement the new Federal regulation and the Federal Highway Administration Interim Final Rule. Exceptions are allowed for law enforcement officers working covertly and for wildland firefighters exposed to flame, high heat, or hazardous materials. Information on how the rule affects wildland firefighters is available at http://www.fs.fed.us/fire/equipment.

For additional information on high-visibility outer garments, contact Dennis Davis, project leader (phone: 406–329–3929, email: ddavis02@fs.fed.us).

Testing Firefighter Undergarments

Wildland firefighters produce a lot of body heat when they're working. They also produce a lot of perspiration. Firefighters understand why they wear flame-resistant outer garments, but synthetic undergarments may seem like a personal choice. Synthetic undergarments are designed to move moisture from the skin and may improve comfort. The "Interagency Standards for Fire and Fire Aviation Operations 2009" instructs firefighters to wear only undergarments made of 100-percent natural fibers because synthetic materials, such as polyester, polypropylene, and nylon, may melt when exposed to direct flame or radiant heat.

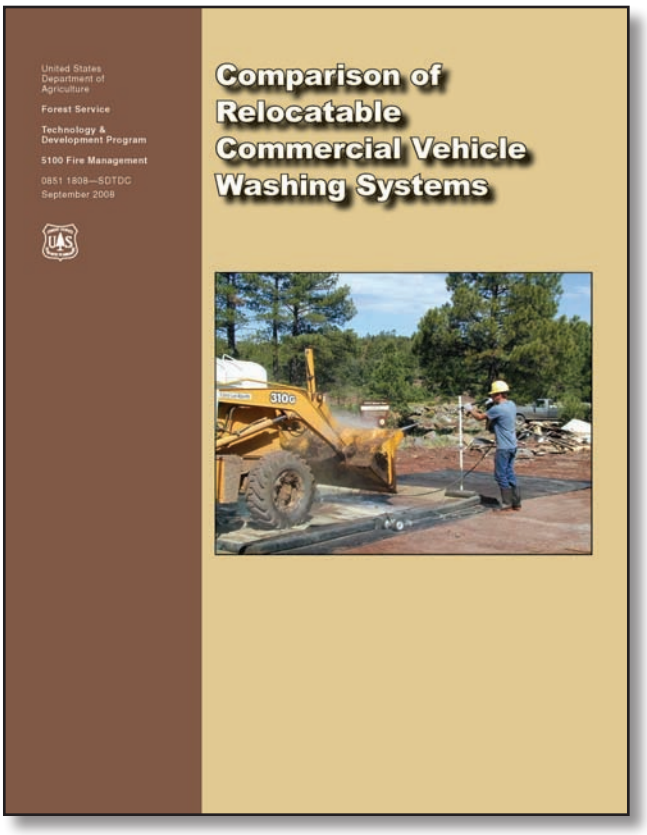
When MTDC compared synthetic materials to natural fibers during tests, 100-percent cotton and wool undergarments did not ignite, melt, or char. The tech tip "Tests of Undergarments Exposed to Fire" (0851–2348–MTDC) provides the test results. View the undergarment flame engulfment and radiant heat exposure tests at http://www.fs.fed.us/t-d/programs/fire/ (Username: t-d, Password: t-d).

For additional information on the firefighter undergarment tests, contact Tony Petrilli, project leader (phone: 406–329–3965, email: apetrilli@fs.fed.us).

Vehicle Washing Systems That Prevent the Spread of Seeds and Spores

Nonnative invasive species of plants and fungi can upset the natural balance of an ecosystem. Vehicles used on Federal, State, and private lands may transport seeds and spores far from where they were picked up. Several contractors have developed systems for cleaning vehicles and equipment to remove seeds and spores. The San Dimas Technology and Development Center (SDTDC) partnered with the U.S. Army Corps of Engineers, Engineer Research and Development Center (ERDC) to evaluate a range of systems for efficiency and cost. The report "Comparison of Relocatable Commercial Vehicle Washing Systems" (0851–1808P–SDTDC) was developed to provide contracting officers from various agencies with guidance on contract washing systems.

For more information about vehicle washing systems, contact Joe Fleming, project leader (phone: 909–599–1267, ext. 263; email: jdfleming@fs.fed.us).



Hydration Systems for Wildland Firefighters

Many wildland firefighters aren't happy with the plastic canteens they're issued. The canteens are not durable, they don't keep the water cool, and the caps are easy to lose. Some crews have experimented with different water bottles and bladder hydration systems. SDTDC evaluated a number of hydration systems for wildland firefighters. The report "Firefighter Hydration Evaluation" (0851–1814P–SDTDC) provides the results.

For more information about hydration systems for wildland firefighters, contact George Broyles, project leader (phone: 909–599–1267, ext. 277; email: gbroyles@fs.fed.us).

Wildland Firefighter Health and Safety Report

USDA FS

Wildland Firefighter
Health & Safety Report

Spring 2008 Missoula Technology and Development Center No. 12

In this issue:

- Featured Topic: Incident Management Stress
- Research: Field Studies of Firefighters
- Risk Management: Firefighter Fatalities
- Field Notes: Fitness and Work Capacity

provide the organization and structure that underlie effective wildland firefighting operations in the United States. The teams also coordinate and manage the responses to a broad category of other natural and manmade disasters. Team members work in highly charged, emotionally demanding conditions. MTDC is documenting job-related stress, identifying ways to manage the stress, and evaluating ways to improve the health and performance of team members.

The Research section reviews project-related field studies of wildland firefighters during the 2007 fire season, including shift food (intermittent feeding), hydration, and health risks for members of incident management teams. The Risk Management section reviews recent data on the causes of wildland firefighter fatalities. The Field Notes section previews the forthcoming third edition of "Fitness and Work Capacity."

Background

This report, the 12th in a series, reviews activities related to the Missoula Technology and Development Center (MTDC) project on wildland firefighter health and safety. The project focuses on three areas:

Work, rest, and fatigue: Determine work/rest guidelines, assignment length, and fatigue countermeasures for crews and overhead teams.

Energy and nutrition: Improve the energy intake, nutrition, hydration, immune function, and health of wildland firefighters.

Fitness and work capacity: Use work capacity and medical standards to ensure the health, safety, and productivity of wildland firefighters.

Human Factors

The Featured Topic of this report focuses on incident management teams and the influence of job-related stress on the health and performance of their members. These teams

An incident management team member conducts a morning briefing.

TD

0851-2814-MTDC

Since 1962, MTDC, in a cooperative research agreement with the University of Montana Human Performance Laboratory, has conducted field and laboratory studies that relate to firefighting. Periodically, results of these studies are sent to the field.

Issue No. 12 of the "Wildland Firefighter Health and Safety Report" (0851–2814P–MTDC) focuses on job-related stress and its influence on the health and performance of members of incident management teams. The report includes project-related field studies of wildland firefighters, recent data on the causes of wildland firefighter fatalities, and a preview of the forthcoming third edition of "Fitness and Work Capacity."

For more information on job-related stress and its effects on health and performance, contact Brian Sharkey, project leader (phone: 406–329–3989, email: bsharkey@fs.fed.us).

Selecting a Slash Mat Removal Solution

During logging, slash is often spread on skid trails to prevent soil compaction, ruts, and erosion. When logging is completed, well-distributed slash can return nutrients to the soil and provide woody debris to help retain soil moisture. Concentrations of slash may require treatments to meet silvicultural, fire hazard reduction, or soil resource objectives. The tech tip "Removing Slash Mats" (0851–2312–MTDC) discusses a number of ways to remove slash, from burning it in place to chipping it and hauling it away.

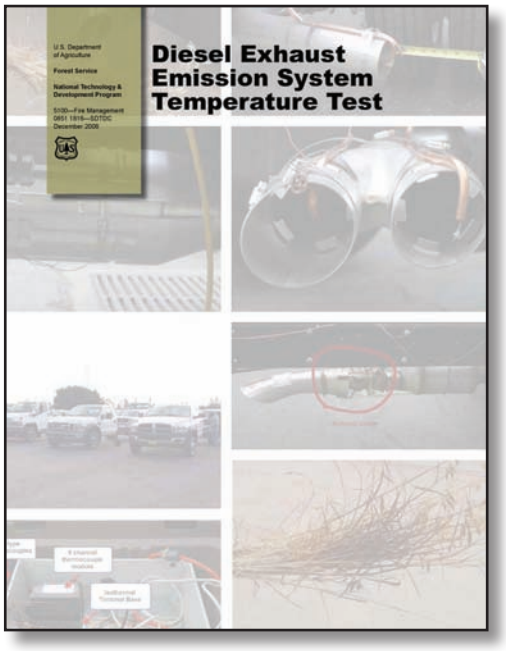
For more information on slash mat removal, contact Scott Groenier, project leader (phone: 406–329–4719, email: jgroenier@fs.fed.us).

Reducing Fuels in Sensitive Environments

Fuel reduction on forested lands has become a major issue in recent years. Overcrowded timber stands increase fire danger and the risk of disease and insect infestation. Planning biomass reduction projects on steep slopes or in environmentally sensitive areas can be complicated. The Fuel Reduction Projects Web site was developed by the MTDC Web group to provide forest managers with a quick and easy way to access information on this subject. "Fuel Reduction Projects in Sensitive Areas and on Steep Slopes: A Guide to Information" (0851–2W03–MTDC) provides general information on fuel reduction and includes links to many sites with more specific information. This site can be viewed on the Forest Service's internal computer network at http://fsweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm08512W03/.

For additional information on fuel reduction in sensitive areas, contact Bob Beckley, project leader (phone: 406–329–3996, email: rbeckley@fs.fed.us).

Testing the Combustibility Potential of Diesel Particulate Filters



Diesel particulate filters are emission-control devices designed to filter particulate matter (soot) produced by diesel engines. These filters are part of an exhaust-treatment system developed to meet the U.S. Environmental Protection Agency emission requirement for 2007 model and newer diesel trucks. The filter's internal temperature must be 932 degrees Fahrenheit or hotter for the filter to function properly. SDTDC designed an exploratory test to measure the temperature of system components and to determine whether the exhaust system's surface temperature or the exhaust gas temperature of new vehicles equipped with diesel particulate filters can ignite fine wildland fuels.

The report "Diesel Exhaust Emission System Temperature Test" (0851–1816P–SDTDC) describes the results of the test performed on five different vehicle models equipped with these filters. The five vehicle models were selected because they were representative of the vehicle chassis used for wildland fire applications.

For additional information on diesel particulate filters, contact Ralph Gonzales, project leader (phone: 909–599–1267, ext. 212; email: rhgonzales@fs.fed.us).

Situational Awareness Fire Posters

The "Situational Awareness" electronic poster collection has a new addition. Guy Pence of the Boise National Forest worked with MTDC to create the Critical Fire Weather poster at http://www.fs.fed.us/t-d/programs/fire/images/weather.jpg (Username: t-d, Password: t-d).

Situational awareness posters focus on wildland firefighting safety concerns and are good tools for safety discussions, PowerPoint presentations, or printing. View all situational awareness posters at http://www.fs.fed.us/t-d/programs/fire/posters.htm (Username: t-d, Password: t-d).

For more information on situational posters, contact Mary Ann Davies, project leader (phone: 406–329–3981, email: mdavies@fs.fed.us).

Rappel Tower Designs for the Forest Service

In 2005, MTDC began to develop standard plans and specifications for towers used to train firefighters who rappel from helicopters. The tower needed to meet all Occupational Safety and Health Administration (OSHA) standards, be easily reconfigured to simulate a variety of different helicopter cabins, and be suitable for expansion when units schedule joint training.

The tech tip "Standard Forest Service Designs for Rappel Towers" (0857–2354–MTDC) provides drawings of a standard design rappel tower with a helicopter cabin simulator that meets appropriate safety regulations. Also included are documents and references on maintaining, inspecting, and using rappel towers, as well as information on estimated construction costs.

For more information on designing rappel towers, contact Scott Groenier, project leader (phone: 406–329–4719, email: jgroenier@fs.fed.us).

How Much Does That Facility Really Cost?

Determining the cost of replacing or constructing a facility can be a complicated task. The report, "Life-Cycle Cost Analysis for Buildings Is Easier Than You Thought" (0873–2839–MTDC) explains how to complete a life-cycle cost analysis of a structure, product, or component over its expected useful life. Life-cycle cost analysis is a method for determining the total cost of a facility by adding the cost of operating, maintaining, and using the facility to the purchase price or construction costs. This report offers a simplified formula for making small decisions and discusses free and commercial life-cycle cost analysis software for making large decisions. Also included is a brief discussion of life-cycle assessments, which calculate a product or service's environmental costs throughout its lifetime.

For additional information on life-cycle cost analysis of facilities, contact Kathleen Snodgrass, project leader (phone: 406–329–3922, email: ksnodgrass@fs.fed.us).

Taking the Lead on LEED

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System was developed by the U.S. Green Building Council (USGBC) to encourage the adoption of sustainable building and development practices based on accepted performance criteria. LEED certification has been mandatory for some new Forest Service buildings since 2005. The report "Implementing LEED: Strategies That Work for the Forest Service" (0973–2802–MTDC) explains how the LEED process works and provides information that can be used by architects, facilities engineers, contracting officers, and line officers to ensure that their LEED projects meet their needs and are cost effective.

This report received the Carl V. Anderson Conservation Project 2009 Award of Honor from the Association of Conservation Engineers.

For additional information on LEED, contact Kathleen Snodgrass, project leader (phone: 406–329–3922, email: ksnodgrass@fs.fed.us).

Checking for Lead-Based Paint Before Restoration

Exposure to lead-based paint that is chipping or flaking can pose a serious health risk. While lead-based paint has not been used in recent years, it may still be found beneath layers of paint that do not contain lead. When undertaking any maintenance or restoration project that will disturb a painted surface, first test for lead-based paint.

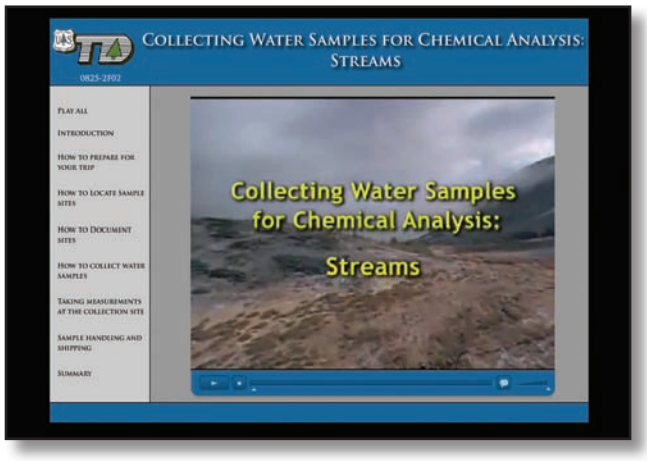
The tech tip "Using XRF Hand-Held Devices to Detect Lead-Based Paint" (0873–2310–MTDC) describes MTDC's evaluation of two XRF (x-ray fluorescence) hand-held devices: one based on radioactive isotopes and the other based on x-ray tubes. Basic principles of operation are discussed as are the advantages and disadvantages of each type of device. Both XRF devices discussed in this tech tip also may be used to detect lead in soil and can be programmed to detect highly toxic elements such as arsenic, copper, and mercury.

For additional information on detecting lead-based paint with XRF hand-held devices, contact Bob Beckley, project leader (phone: 406–329–3996, email: rbeckley@fs.fed.us).

Watershed, Soil, and Air

What's the Quality of Your Forest's Water?

Watersheds in the National Forest System may suffer adverse effects from changing air quality or land uses. Monitoring and testing lakes and streams for the effects of air pollution requires clean, high-quality water samples for analysis. "Collecting Water Samples for Chemical Analysis: Streams" (0825–2F02–MTDC) helps users understand how to locate sample sites, how to collect and handle water samples, and how to measure stream discharge, width, depth, and temperature. View the presentation on the Forest Service's internal computer network at http://fsweb.mtdc.wo.fs.fed.us/pubs/flash/fla08252F02/ or on the Internet at http://www.fs.fed.us/t-d/pubs/flash/fla08252F02/ (Username: t-d, Password: t-d).



Forest Health Protection

Improved Harness for Backpack Sprayers

Backpack sprayers are used to apply herbicide to noxious weeds in areas that are not easily accessible by vehicle. Backpack sprayers hold more herbicide than hand-held sprayers and they can be pumped to maintain nozzle pressure while the operator walks at a steady pace. An improved harness for backpack sprayers, developed by MTDC for two popular models, addresses past problems: poorly designed straps and uncomfortable back support. Other improvements help prevent backpack sprayers from leaking.

The tech tip "Harness Makes Backpack Sprayers Easier to Pack and Less Likely to Leak" (0834–2345–MTDC) describes the new harness improvements, such as a well-padded back panel, waist belt, and shoulder harness yoke. Drawings with full-size patterns, as well as information on sprayer maintenance, constant flow regulators, sprayer specifications, calibration references, and vendors, are available from MTDC.

For additional information on the backpack sprayer improvements, contact Gary Kees, project leader (phone: 406–829–6753, email: gkees@fs.fed.us).

Chief Information Office

Satellite Messenger Hits the SPOT

Establishing communication from the field is important for the safety of Forest Service employees. There are times and places when cell phones, satellite phones, and Forest Service radios do not work. The SPOT Satellite Messenger, a small, durable, satellite-based personal messenger and GPS tracking device, can be used to send emergency messages and GPS coordinates, even under a forest canopy. The report "Evaluation of the SPOT Satellite Manager" (0825–2842–MTDC) gives a detailed account of tests performed using this device.

For additional information on the SPOT Satellite Messenger, contact Andy Trent, project leader (phone: 406–329–3912, email: atrent@fs.fed.us).

Accessories

Accessories for the Field

Pulaski Sheaths—When not in use, the Pulaski's sharp ax and hoe toolheads should be covered by an orange plastic sheath. As currently designed, the sheath's strap can slip through the buckle, allowing the covers to loosen or fall off the toolheads. The tech tip "Improving the Pulaski Sheath" (0823–2347–MTDC) explains how to modify the current sheath with a strip of nylon webbing and a metal buckle to keep the covers tight on the toolheads.

Belt Sander for Sharpening Pulaskis and Axes—Field crews typically use hand files to sharpen their Pulaskis and axes. Narrow belt sanders can be used to do the job more quickly, but sanders can damage the blade if they are used improperly. The tech tip "Modified Belt Sander Sharpens Axes and Pulaskis" (0823–2327–MTDC) explains how to fashion a bracket that allows a commercially available belt sander to be used much like a draw file. Diagrams for constructing the bracket and instructions for sharpening single- and double-bit axes and Pulaskis are included.

Collecting Native Seeds—Collecting native seeds by hand can be a tedious and time-consuming task. MTDC was asked to evaluate some alternative methods that might streamline the task. The tech tip "Hands Beat Machines for Collecting Native Seed" (0824–2353–MTDC) describes field tests that compared the Garden Groom Pro hedge trimmer, the Euro-Pro Shark hand-held vacuum, and traditional hand collection.

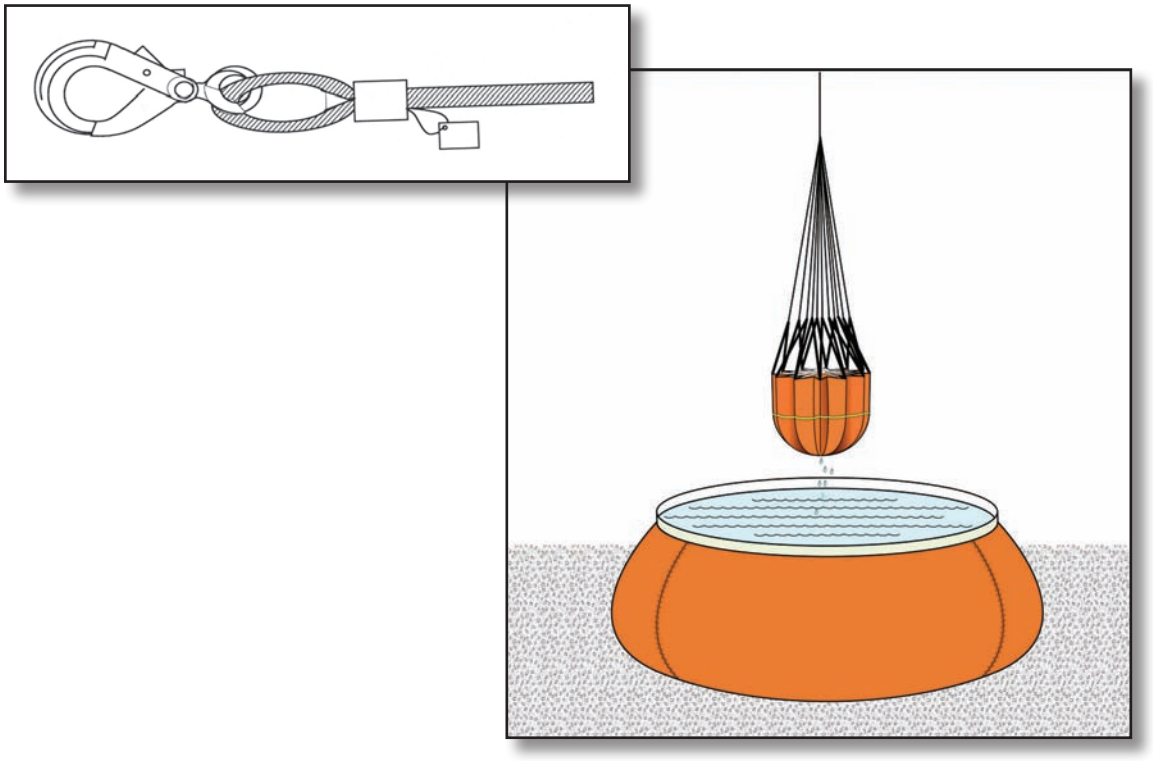
For additional information on the modified Pulaski sheath, the belt sander bracket, or on collecting native seeds, contact Mary Ann Davies, project leader (phone: 406–329–3981, email: mdavies@fs.fed.us).

Helicopter Accessory Tips

Leadlines—Some leadlines are incompatible with the standard 3,000-pound capacity cargo net because the leadline hook's spring gate does not close when the two cargo net links are inserted into the hook. The tech tip "3,000-Pound Leadline Retrofit" (0857–1304P–SDTDC) describes an investigation into this problem and offers some possible solutions. The most practical solution is to retrofit the affected cargo leadlines. Instructions on the retrofit are included.

Dip Tank Guide—Firefighting helicopters use mobile, collapsible dip tanks to cut the distances they must travel when the local water source is not deep enough, or to alleviate environmental concerns when using water from local steams or lakes. Dip tanks come in many sizes, shapes, and forms. The tech tip "Helicopter Dip Tank Capabilities and Users' Guide" (0857–1303P–SDTDC) provides helicopter field operators with the information needed to match the proper dip tank to their equipment, while improving safety and reducing costs. Information on care and maintenance of various dip tanks is also included. This tech tip updates the original published with the same title in 2006.

For additional information on the leadline retrofit or helicopter dip tanks, contact Carl Bambarger, project leader (phone: 909–599–1267, ext. 253; email: cbambarger@fs.fed.us).



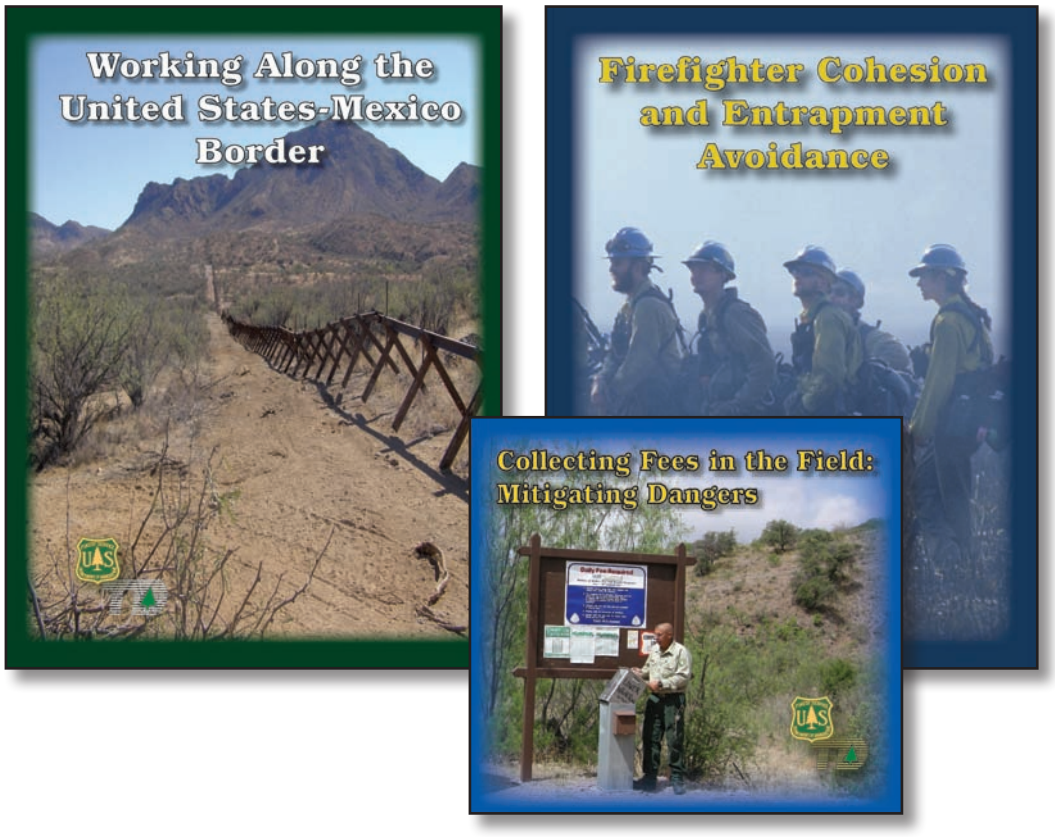
Three DVDs Help Keep Field Employees Safe

Border Safety—Employees who work along the United States-Mexico border may face drug smuggling activities, high-speed pursuits of illegal immigrants, armed confrontations with dangerous people, and work environments littered with refuse and biological hazards. The DVD "Working Along the United States-Mexico Border" (0823–2D11–MTDC) is a three-module personal safety program that captures the knowledge and skills of Federal and State employees who work in this potentially dangerous work environment. Modules one and two are designed for all employees, while module three is designed specifically for firefighters.

Firefighter Cohesion—In recent years, cohesion among firefighters has become a significant issue in the Forest Service. Studies emphasize the importance of cohesion in maintaining personal safety and avoiding entrapment situations. The DVD "Firefighter Cohesion and Entrapment Avoidance" (0951–2D02–MTDC) is designed to raise firefighters' awareness and to stimulate discussions about cohesion among firefighters.

Recreation Fee Collection—Collecting recreation fees is part of the work of many Forest Service employees. The DVD "Collecting Fees in the Field: Mitigating Dangers" (0823–2D08–MTDC) describes the problems and hazards employees may face when collecting fees and how to deal with them.

For additional information on these three DVDs, contact Lisa Outka-Perkins, project leader (phone: 406–329–3849, email: loutka-perkins@fs.fed.us).



Getting To Know Your T&D Program

The National Technology and Development Program is always looking for ways to help Forest Service employees perform their jobs more safely, more effectively, and more economically. The DVD "National Technology and Development Program: Solving Problems for the Forest Service" (0971–2D01–MTDC) provides an overview of the critical work the Forest Service's two technology and development centers perform in support of programs such as fire, forest management, GPS, recreation, safety, facilities, engineering, and reforestation and nurseries.

The DVD can be viewed online at http://www.fs.fed.us/t-d/t-d_pres/ (Username: t-d, Password: t-d).

For additional information on the DVD, contact Sunni Bradshaw, visual information specialist (phone: 406–829–6765, email: srbradshaw@fs.fed.us).

People in the News

Dave Aicher Hangs Up His Spurs

After more than 36 years of service, Dave Aicher, the former manager of the Missoula Technology and Development Center, has traded in his Forest Service uniform for a fishing pole. On Saturday, February 28, 2009, Dave's colleagues, coworkers, friends, and family got together at the Missoula Children's Theater to celebrate his career and accomplishments. Many thanks to Dave for his years of hard work and dedication to the land and the communities that we serve!

The Wildland Fire Safety Award

Dr. Brian Sharkey has been working to improve the wellness, safety, and performance of wildland firefighters since 1964 when he first began work as a faculty member at the University of Montana. Working with MTDC, Sharkey has used his knowledge of physiology and fitness to develop standards, such as the pack test, which helps measure the physical ability needed to work as a wildland firefighter. Over his 45-year career, Sharkey has helped to develop meals, hydration methods, and adequate rest programs for wildland firefighters. He has studied the health hazards of smoke and the effects of heat stress on firefighters and has worked to develop ergonomic tools that help firefighters get their job done safely and more efficiently.

In April 2009, the International Association of Wildland Fire recognized Sharkey's many contributions to the safety and well-being of wildland firefighters with the Wildland Fire Safety Award.

Engineer of the Year Awards

Every year the Forest Service acknowledges the work of engineering employees with the Engineer of the Year Awards. In 2008, the following employees were recognized for their accomplishments: Melissa "Misty" Shafiqullah, managerial engineer of the year; Dick Karsky, technical engineer of the year; Robert S. Ingram, engineering technician of the year; and Ben Gentry, engineering technology applications employee of the year. Their stories can be found on the Forest Service's internal computer network at http://fsweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm09713801/ and on the Internet at http://www.fs.fed.us/t-d/pubs/htmlpubs/htm09713801/ (Username: t-d, Password: t-d).

The winners traveled to Washington, DC, in May for the U.S. Department of Agriculture 2008 Forest Service Engineer of the Year awards ceremony.

Melissa "Misty" Shafiqullah

Dick Karsky

Robert S. Ingram

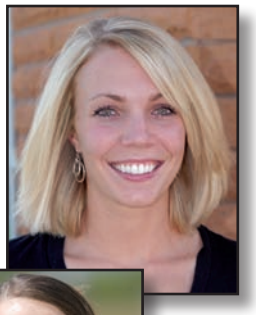
Ben Gentry

New Faces

New Faces at MTDC and SDTDC

Carl Schaefer joined SDTDC in April 2009 as a mechanical engineering technician intern in support of the fire and aviation and forest management programs. He brings a wide variety of experience in mechanical design, layout, drafting, prototype fabrication, and model making. He is proficient with machine tools, mold presses, sheet metal equipment, and sewing machines, and is versed in SolidWorks software for design and development. Schaefer also has conducted structural and environmental tests to verify that products meet or exceed applicable regulatory standards, and has developed and designed respiratory protection products for industrial and firefighting applications.

Thomas Nelson Hawkins joined MTDC in May 2009 as a Web development assistant in the Student Temporary Employment Program. He helps maintain the center's Web sites and assists with the National Construction Certification Program. Hawkins was raised in Missoula and is a senior at the University of Montana where he is pursuing a bachelor's degree in business administration. He enjoys skiing in the winter and golfing in the summer. He is also a "professor" of ping pong, instructing other students at the university in the finer points of the game.



Samantha Lidstrom joined MTDC in July 2008 in the Student Temporary Employment Program as a research and publications assistant for engineering. Lidstrom is a Missoula native in her third year as a civil engineering student at Montana State University in Bozeman, MT.

Corrine "Corri" Olson joined MTDC in May 2009 as a Web development assistant in the Student Temporary Employment Program. She helps to develop and maintain the center's Web sites. Born and raised in Ashland, MT, she moved to Missoula in the fall of 2006 to attend school. Olson is a senior in the computer science program at the University of Montana.

On the Web...

- Forest Service and Bureau of Land Management employees–View MTDC and SDTDC documents at: http://fsweb.mtdc.wo.fs.fed.us/search
- Everybody–View MTDC and SDTDC documents at: http://www.fs.fed.us/eng/pubs/
- Everybody–View MTDC and SDTDC documents at: http://www.fs.fed.us/t-d/ (Username: t-d, Password: t-d)

Missoula Technology and Development Center (MTDC)
5785 Hwy. 10 West; Missoula, MT 59808–9361
Phone: 406–329–3900 • Fax: 406–329–3719
Forest Service Intranet Web site: http://fsweb.mtdc.wo.fs.fed.us

San Dimas Technology and Development Center (SDTDC)
444 East Bonita Ave.; San Dimas, CA 91773–3198
Phone: 909–599–1267 • Fax: 909–592–2309
Forest Service Intranet Web site: http://fsweb.sdtdc.wo.fs.fed.us

Library Card

Wolf, Jerry Taylor; McLean, Andrew D. 2009. T&D news: number 1, 2009. Tech. Rep. 0971–2822–MTDC. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. 20 p.

This issue of T&D News describes projects that are underway and finished products that are available at the Forest Service's Missoula and San Dimas Technology and Development Centers. Topics in this issue include:

- Guides for Forest Service Volunteers and Volunteer Coordinators
- Outer Garments That Keep You Safe
- Testing Firefighter Undergarments
- Vehicle Washing Systems That Prevent the Spread of Seeds and Spores
- Hydration Systems for Wildland Firefighters
- Wildland Firefighter Health and Safety Report
- Selecting a Slash Mat Removal Solution
- Reducing Fuels in Sensitive Environments
- Testing the Combustibility Potential of Diesel Particulate Filters
- Situational Awareness Fire Posters
- Rappel Tower Designs for the Forest Service
- How Much Does That Facility Really Cost?
- Taking the Lead on LEED
- Checking for Lead-Based Paint Before Restoration
- What's the Quality of Your Forest's Water?
- Improved Harness for Backpack Sprayers
- Satellite Messenger Hits the SPOT
- Accessories for the Field
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- The Wildland Fire Safety Award
- Engineer of the Year Awards
- New Faces at MTDC and SDTDC

Keywords: Air Resource Management Program, ANSI/ISEA 107-2004, awards, biofuels, burnovers, canteens, cargo nets, collecting, community service, data communications, diesel particulate filters, equipment development, erosion control, fees, fire fighting, fuel reduction, hand tools, herbicides, LEED, life-cycle assessments, personal safety, portable tanks, rappelling, remote work locations, retrofits, safety in the workplace, satellites, trimmers, undershirts, underwear, Volunteers in the National Forests Act of 1972, wastewater, water bottles, work capacity, x-ray fluorescence

Forest Service Technology & Development Program

PROJECT PROPOSAL

Project Name/Title:

_____

_____

_____

Date:_____

Submitted by:_____

Unit:_____

Address:_____

_____

_____

Phone:_____ Email:_____

OVERALL PROBLEM/OBJECTIVE STATEMENT *(Describe the problem, how the work is currently being done, and why improvement is needed):*

_____

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PROPOSED TECHNOLOGY & DEVELOPMENT WORK *(Describe your concept of the end product, such as a new equipment design, a PowerPoint presentation, a video, a handbook, Web site, CD, DVD, etc.):*

_____

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POTENTIAL BENEFITS *(Describe how this project will reduce cost, save time, improve safety, increase efficiency, or improve resource management):*

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_____

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Return address

Stamp

USDA Forest Service
Missoula Technology and Development Center
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Pesticide Precautionary Statement

This publication does not contain recommendations for the use of pesticides, nor does it imply that the uses discussed here have been registered. All uses of pesticides must be registered by appropriate State and/or Federal agencies before they can be recommended.

CAUTION: Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife—if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers.