

Achieving and Maintaining Safe Work Environments at Remote University Locations

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More than 2,200 employees and researchers work at University of California Division of Agriculture and Natural Resources (ANR) facilities and on public and private properties located throughout California. Assuring safe work environments and as a consequence, compliance with environmental health and safety (EH&S) laws and regulations at the various decentralized and remote university locations is a logistical challenge. The ANR EH&S Office has successfully assisted with achieving and maintaining safe work environments at these university locations by performing a limited number of on-site Program Reviews, providing a variety of technical field support and EH&S postings on a web site, working with on-site Safety Coordinators, and regularly transmitting electronic messages that describe forthcoming or ongoing EH&S issues.

Introduction

ANR develops and applies knowledge about agricultural, natural, and human resources across California, an area exceeding 150,000 square miles. ANR is comprised of approximately 1,500 employees and more than 700 agriculture experiment station researchers working at 75 locations, including nine Research and Extension Centers (RECs), more than 60 County (CE) Cooperative Extension and Statewide Program offices, and on a variety of both public and private properties. Figure 1 shows the locations of ANR facilities throughout California.

ANR facilities are typically occupied by relatively small staffs of between 10 and 20 employees and researchers and therefore, environmental health and safety positions are not justifiable at each facility

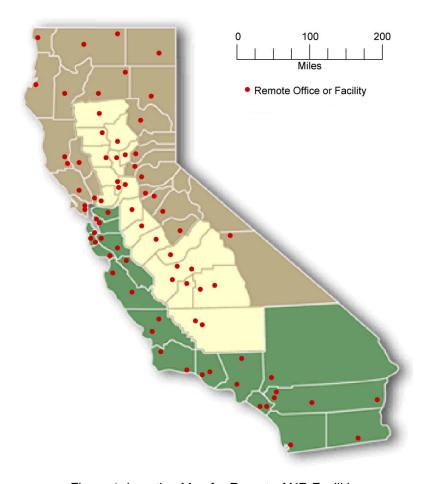


Figure 1. Location Map for Remote ANR Facilities

location. Accordingly, environmental health and safety support is provided to ANR facilities by three staff working out of the Environmental Health & Safety (EH&S) Office, located on the campus of the University of California, Davis. A Safety Coordinator has been designated at each ANR office and each REC.

Achieving and maintaining safe work environments at the decentralized and remote locations where ANR operates is the mission of the EH&S Office. Because of time and travel limitations, staff of the EH&S Office are not capable of providing in person support to all ANR components (i.e., offices, RECs, programs, students, personnel, or researchers). Several strategies have been developed and implemented to communicate regulatory requirements, training materials, and procedural guidelines to remote ANR locations. Establishing communication channels that convey clear, concise, and timely messages is a key element that supports the mission of achieving and maintaining safe work environments at remote university locations such as those occupied by ANR personnel. Safety Coordinators serve as points of contact and facilitate communication between the EH&S Office and ANR facilities.

The first step toward achieving safe work environments is to determine whether EH&S deficiencies exist at remote locations. Once EH&S deficiencies have been identified, then they may be systematically addressed.

The EH&S Office assesses whether deficiencies exist primarily by transmitting web-based questionnaires to administrative and supervisory staff at remote locations and asking specific yes and no questions about EH&S topics. Figure 2 is an example of a web-based questionnaire that was used to solicit information from remote ANR locations. When and where possible, EH&S staff also attend regional and local ANR meetings and give presentations that incorporate asking similar questions about EH&S topics. This may also include distributing paper copies of questionnaires during presentations or seeking feedback about local worksite safety needs.

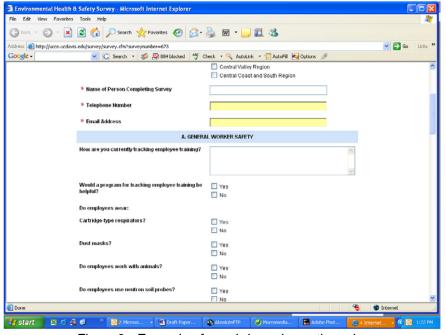


Figure 2. Example of a web-based questionnaire.

questions During 2005. about general worker safety, physical facilities and equipment, agricultural health and safety, and written plans compliance were electronically submitted to **ANR** remote locations. Responses to the questions were compiled and deficiencies were identified and ranked according to seriousness and prevalence. Thereafter, specific courses of action were developed rectify to identified deficiencies.

An example of an electronic question submitted during January 2005 to ANR remote

locations asked "Would a program for tracking employee training be helpful?" Seventy-four percent of the respondents indicated that a program for tracking employee training would be helpful. As a result, four different training tracking and record forms for field, operations and maintenance, laboratory, and office employees were developed and made available for ANR

remote locations on the EH&S web page. Figure 3 is an example of an employee training and tracking record form.

Once programs promoting safe work environments have been established at remote university locations, an ongoing task is to create a suite of user friendly materials, information, and support that serve resources for the development and maintenance of safe work environments. The EH&S Office has continually developed and implemented several types of resources to assist remote locations in their efforts to maintain safe work environments. These resources are described below:

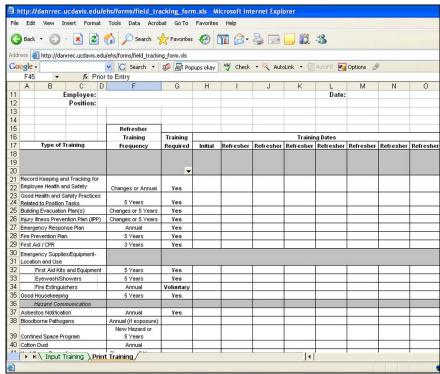


Figure 3. Example of an employee training tracking and record form.

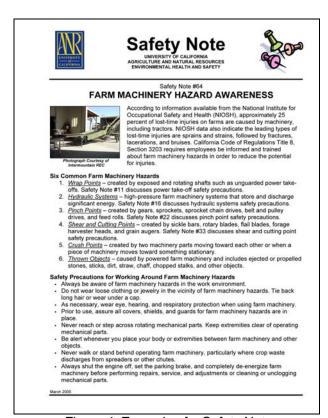


Figure 4. Example of a Safety Note

Safety Notes

A series of more that 100 Safety Notes has been developed to address identified needs for ANR EH&S training materials. Safety Notes are summaries of relevant information about specific topics that have been requested by ANR personnel. Safety Notes continue to be developed as additional requests for training on specific topics are transmitted to the EH&S Office. All Safety Notes are posted on the EH&S web site at http://danrrec.ucdavis.edu/ ehs/safety notes/ for ready availability anywhere there is internet access. At present, Safety Notes are listed on the web site under the following seven general categories: Agricultural Operations (20 total), Pesticide Operations (six total), Physical Plant Operations (11 total), Operations (16 total), Office Operations (three total), Outdoor Operations (17 total), and All Operations (27 total).

Safety Notes are purposefully designed for their intended audience of students.

professionals, office workers, technicians, supervisors, and researchers. Accordingly, Safety Notes incorporate a picture or drawing and information about topic-related injuries or illness to provoke the reader's interest followed by descriptions of regulatory requirements and a succinct discussion of precautions to prevent topic-related injuries or illness. Safety Notes also are concisely written to emphasize the primary EH&S issues related to the topic and restricted to one page to maintain the reader's attention. When applicable, additional informational resources are referenced in the Safety Notes (see Figure 4). Finally, Safety Notes are intended to be used while connected to the web site or for downloading and handing out at brief safety meetings such as tailgate meetings.

		UNIVERSITY OF CALIFORNIA AGRICULTURE AND NATURAL RESOURCE: INJURY AND ILLNESS PREVENTION PROGRA				
SITI	E LO	CATION: DATE:				
NAI	ME O	F INSPECTOR:				
		respector. Some topics on this checklist may not apply to many ANR loca cation or operations and draw a line though any section that is not applic		Use the	e sectio	ons that appi
RE	COR	D KEEPING				001
1.	Me	dically Related Information	Yes	No	N/A	Date
	A.	Cholinesterase testing current?				-
		(1) Written agreement on file?		ŏ	ŏ	
	B.	Hearing tests current?				
	C.	Injury/Illness reports filled out and submitted on time?	-			
	D.	Organophosphate/Carbamate surveillance current?				
	E.	Animal Handlers questionnaire and medical surveillance current?	-	ŏ	ŏ	
	F.	Respirator Use questionnaire and fit test current?		П	П	
	G.	Other required medically related information:	-	_	_	
						Date
2.		sining Records	Yes	No	N/A	Corrected
	A.	Records of initial and refresher training are current and on file? (ie: Employee Health & Safety Training Plan and Tracking form)				
	В	Pesticide safety training form used and filed?	1			
	C.	Forklift and Tractor training records current and filed?	H	H	H	
	D.	Animal Handlers training current and filed?		H	H	
	E.	Training forms used and kept on file?	Н	H	Н	
	F.	Personal protective equipment training current?	H	H	H	
	G.	Emergency response/building evacuation protocols?	H	H	H	
	H.	Safety awareness programs in place and training recorded?	H	H	H	
	I.	Other required training:				
3.	Inventories/Inspections				N/A	Date Corrected
	Α.	Chemical/pesticide inventories current?	Yes	No.		Solvected
		(1) Annual submittal of Hazardous Materials Business Plan?	_	Н	Н	
	B	Hazardous waste inventory current?		H	Н	
	C.	Fire extinguisher location inventory current?	H	H	П	
		(1) Annual fire extinguisher service current?		ä	H	
		(2) Monthly fire extinguisher inspections current?	Н	H	H	
	D.		_			
	E.	Monthly Emergency Eyewash/Shower Unit inspections current?				
	F.	Are all safety and maintenance inspections recorded and filed?				
	G.	[- [- [- [- [- [- [- [- [- [-				

Figure 5. Periodic Worksite Inspection Checklist, page 1.

Program Reviews

Program Reviews are conducted by staff from the EH&S Office and are intended to simulate a potential inspection from a regulatory agency. At the nine RECs, Program Reviews are conducted at least annually. Elsewhere, Program Reviews are performed on an as requested basis or randomly in conjunction with a site visit for other purposes. A Program Review may be scheduled in advance, as are the annual REC Program Reviews, or unannounced. In addition, Program reviews may be "complete" where all items on the Periodic Worksite Inspection Checklist are evaluated or "partial" where selected items from the checklist are assessed. Typically, Program Reviews are partial and focus on issues that have been determined to be a recurring health or safety concern, compliance problem, a newly identified regulatory compliance issue. Complete Program Reviews are usually performed every five years at RECs. The Periodic Worksite Inspection Checklist is a

document that provides a comprehensive listing of potential safety and compliance issues involving record keeping, facility operations, hazardous materials and waste, and water and field sanitation. The checklist allows the person performing the inspection to readily identify whether a specific safety or compliance issue is present at the site and if so, whether it is or has been satisfactorily addressed by checking the appropriate yes or no box. Figure 5 shows page 1 (out of 11) of the Periodic Worksite Inspection Checklist.

When non-compliant issues are identified during a Program Review, a deficiency notice is issued depending on the urgency of the situation and the ANR facility is given a timeframe to remediate the non-compliant issue. Remediation time frames range from immediate to 30 days

or 45 days depending on whether the deficiency is determined to be "imminent," "serious," or "moderate," respectively.

At the conclusion of the Program Review, EH&S staff perform an on-site closure meeting where the review is summarized and all deficiencies are described and remedial actions are clearly identified. Moreover, any questions from ANR facility personnel are answered at that time. All Program Reviews are documented in written reports that are distributed to the ANR facility or office.

Corrections of "imminent" or "serious" compliance issues are documented by the ANR facility using a written verification form that is transmitted to the EH&S Office for review within a negotiated time frame of usually 30 to 45 days.

Procedural Guidance Documents

EH&S Office staff have developed a series of procedural guidance documents that are posted on the EH&S web page at http://danrrec.ucdavis.edu/ehs/guides/ for easy access. These documents address the following variety of topics:

- Fieldwork in Forested, Brush-Covered, Grassland and Wetland Areas
- Storage and Removal of Regulated Waste
- Project Leader Guideline for Laboratory Accumulation of Hazardous Waste
- Lead-Based Paint Evaluation and Disclosure
- Emergency Eyewash and Shower Placement/Design
- Employee Health and Safety Training
- Health and Safety Training Library
- Experimental Use of Pesticides
- Fire Control and Suppression
- Firearms
- Confined Space Program
- Pesticide Use and Handling
- Respiratory Protection Program

Each guidance document describes the regulatory requirements for the topic and establishes procedures to achieve and compliance with maintain those requirements. When the user accesses a guidance document on the web site, a diagram similar to an organizational chart appears. The descriptor for each labeled box on the chart is linked to that specific guidance document page so the web page user is able immediately access the desired information. Figure 6 shows the diagram chart for the guidance document entitled Storage and Removal of Regulated Waste.

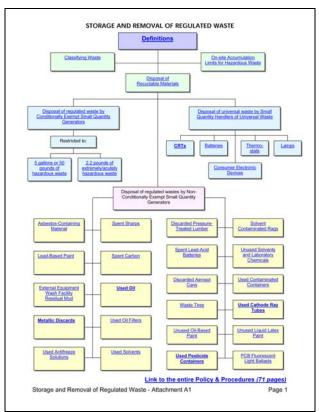


Figure 6. Storage and Removal of Regulated Waste Chart



Figure 7. Desert Research and Extension Center Mold Investigation

Field Technical Support

Staff of the EH&S Office necessarily provide a variety of technical field support to address new and ongoing EH&S issues at remote ANR locations. Technical field support encompasses conducting assessments, investigations, and surveys, establishing protocols, developing plans, and managing projects. Examples of technical field support include performing asbestos, mold, water treatment system, and lead-based paint sampling, conducting confined space and lead-based paint surveys and Phase I Site Assessments, supervising the disposal of regulated waste, laboratory chemicals, and pesticides, managing projects to remove asbestos and decertify permit-required confined spaces,

and developing site-specific Spill Prevention Control and Countermeasure (SPCC) and Emergency Response Plans.

ANR Video Training Library

The EH&S Office manages a Video Training Library for the use of ANR remote locations. The library catalog includes VHS and DVD training materials that address a diverse suite of subjects ranging from earthquake safety and heat stress to safe practices for using equipment and machinery. There are a total of 66 separate training titles currently in the library. Sixty titles are available as VHS cassettes and six titles are available as DVDs. Twenty-seven titles are also available in Spanish. In the future, VHS cassettes will be phased out as new library purchases will be exclusively in the DVD format. VHS cassettes and DVDs may be ordered through the EH&S web site by completing a Training Video Request Form online and transmitting it electronically to the EH&S Office. Requests are generally filled and mailed to remote ANR locations within three working days. VHS cassettes and DVDs are loaned to remote ANR locations for a period of 14 days from receipt of the training material.



Figure 8. Training Video Library Catalog

Safety Coordinators

Safety Coordinators are appointed by the Center/County/Program Directors to facilitate the flow of environmental, health, and safety information and programs from the EH&S office to each ANR location. The EH&S office trains Safety Coordinators on general EH&S program requirements and responsibilities and provides tools to assist Safety Coordinators' accomplish their goals.

The skills and abilities of a Safety Coordinator include:

- A permanent UC or County employee who has the support and cooperation of management to devote time to the safety program and take actions as necessary. The Safety Coordinators have a two-year commitment (i.e., not a rotational assignment).
- General familiarity with department operations, personnel, facilities, and equipment.
- The ability to analyze and interpret EH&S principles, procedures, and regulations and apply them to the specific requirements and needs of the unit.
- An appreciation for employee safety, injury/illness prevention, and environmental protection and an understanding of how these ideals are integrated into ANR's mission.
- Team-oriented, with ability to identify safety or environmental concerns and assist staff with correcting hazardous conditions.

The duties and responsibilities of a Safety Coordinator include keeping track of required safety plans, audits, and training requirements and striving to ensure that plans and inspections are completed and up-to-date. The Safety Coordinator may enlist the assistance of other staff to complete these activities. Specific duties include ensuring that the Injury & Illness Prevention Program (IIPP) requirements for the department are met; performing or coordinating annual workplace inspections to identify and correct hazards; assisting with investigation of work-related injuries; acting as a health and safety resource for co-workers; assisting with review and assessment of the department's safety program and reporting to the Director and/or Safety Committee; and posting safety information on bulletin boards or in break rooms.

Ongoing EH&S Notifications

The EH&S Office also provides ongoing electronic notifications to ANR facilities to inform them of changes in regulations or to spotlight existing or forthcoming issues related to EH&S. These communications are sent electronically to the Director of each ANR facility, as well as the Safety Coordinator so information can be appropriately disseminated to other employees and researchers. For example, during August 2005 the California Occupational Safety and Health Standards Board (OSHSB) adopted an emergency standard for heat illness prevention in response to eight cases of possible heat-related illness, including five fatalities. In response to the action taken by OSHSB, the EH&S Office electronically transmitted a memo to notify each ANR facility of the action and describe the newly enacted regulatory heat illness prevention standard. At the same time, a model heat illness prevention plan and information about heat illness symptoms, preventing heat illness, and first aid measures to mitigate heat illness were also electronically transmitted to ANR facilities.

Routine electronic mail is also sent throughout the year to notify employees and researchers, at remote ANR locations, of new or revised Safety Notes, Policies and Procedures, Administrative Guidelines, and other pertinent EH&S information.

Assessment of the ANR EH&S Program for Remote Locations

The success of the remote location EH&S program may be measured by several methods. One method is to measure the amount of traffic accessing the EH&S web site. Using tracking software, a more than 200 percent increase in web site "hits" has been documented since a concerted effort to use the web site for communicating EH&S information began in 2004.

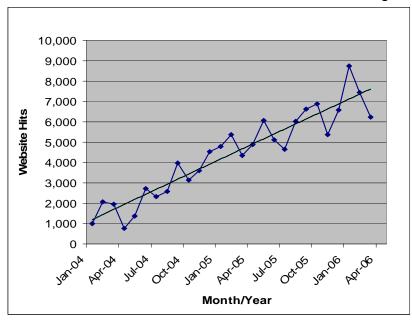


Figure 9. EH&S Website Traffic

Data also indicate prominent increases in web site traffic occur simultaneously with the transmittal of electronic notifications, about the posting of new Safety Notes or other significant EH&S information, to remote ANR facilities.

A second method of determining program success is to measure the response rate to electronic surveys. During 2005, response rates ranged from 50 to 80 percent. These data suggest a good rate of participation in the EH&S program by ANR remote facilities.

EH&S program success may also be measured by reviewing the results of Program Reviews at remote ANR facilities. Between 1998 and 2005, 63 Program Reviews were conducted and a total of 797 deficiencies were issued. Of this total, there were two "imminent," 196 "serious," and 599 "moderate" deficiencies. On average, the 63 Program Reviews encompassed inspection of approximately 200 items given on the Periodic Worksite Inspection Checklist. Analysis of the Program Review data indicates about six percent of the inspected items were found to be deficient. The low incidence of deficiencies issued as part of Program Reviews demonstrate employees at remote ANR facilities are proactively developing and maintaining workplaces that value safe work environments. Moreover, regulatory agencies have performed approximately 28 inspections at remote ANR facilities since 2000. Twenty (about 70 percent) of these inspections resulted in no regulatory action and six (about 20 percent) resulted in the regulatory agency making minor deficiency findings with attendant corrective actions. Corrective actions were required for three violations issued at two of the inspections. However, no fines were assessed for the three violations. Regulatory inspection data not only concur with data from the Program Reviews, but also support the overall determination that safe work environments are being maintained in compliance with EH&S laws and regulations at remote ANR facilities.

Conclusions

ANR employees work at 75 facilities located throughout California. Providing EH&S support to these decentralized and remote locations has been accomplished by infrequent site visits and to a larger degree by several types of electronic communications. The EH&S Office has assisted with achieving and maintaining regulatory compliance by communicating clear, concise, and timely information and by implementing a limited number of on-site Program Reviews and a variety of technical field support and electronic messages and postings on a web site, including

questionnaires, Safety Notes, procedural guidance documents, and ongoing EH&S notifications. Web site, electronic questionnaire, Program Review, and regulatory agency inspection data indicate the EH&S Office is successfully providing support that assists remote university locations to achieve and maintain not only safe work environments, but also regulatory compliance.

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