DEVELOPMENT AND IMPLEMENTATION OF TRAINING PROGRAMS FOR HAZARDOUS SUBSTANCES

Annual Report
Interagency Agreement No. Y1-ES-8059-12

Prepared by:

National Institute for Occupational Safety and Health
Office of Extramural Programs
4676 Columbia Parkway
Cincinnati, OH 45226-1998

For:

National Institute of Environmental Health Sciences
Office of Program Development, DERT
79 T. W. Alexander Ave.
P.O. Box 12233
Research Triangle Park, NC 27709

March 2009

TABLE OF CONTENTS

INTRODUCTION

In 1988, the National Institute for Occupational Safety and Health (NIOSH) entered into an Interagency Agreement with the National Institute of Environmental Health Sciences (NIEHS) to conduct a continuing education program in hazardous substance training. The authority for this program is established in Section 311 (a)(1)(B) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 as amended by Section 209 of the Superfund Amendments and Reauthorization Act (SARA) of 1986. In 1993, the program was expanded to include graduate academic training to further meet the needs of professional personnel. This program is being conducted through supplemental training grants to the NIOSH Education and Research Centers (ERCs).

TARGET AUDIENCE

As specified in SARA, the target audience is as follows:

1. State and local health and environmental agency personnel, and,
2. Other professionals engaged in the management of hazardous substances.

The training is intended to prepare professional personnel to properly carry out their responsibilities in the hazardous substance response and site remediation activities authorized by SARA. This workforce is in continuing need of training through continuing education courses as well as more intensive academic coursework with specialization in the occupational and environmental health and safety field.

HAZARDOUS SUBSTANCE CONTINUING EDUCATION PROGRAM (HST)

A. Program Characteristics

This program is a component of the continuing education program within the ERCs and includes the following elements:

- Coordination of training activities with Agencies responsible for cleanup, enforcement, and training of personnel under CERCLA/SARA and other relevant groups;
- A specific plan to develop and implement a program of instruction over the approved project period;
- A Project Director with demonstrated capacity for providing leadership in conducting training in the handling, managing, or evaluation of hazardous substances, and with education and/or experience in the hazardous substance field;
- A project staff with demonstrated experience and technical expertise to develop the curricula and provide quality training;
- The implementation of short courses and continuing education programs for State, and local health and environmental professionals and other professionals involved in evaluating, managing and handling hazardous substances; and
- Evaluation of the program that shall include a determination of whether the regional needs for training professionals are being met.

B. Program Update

A Request for Applications (RFA) was issued by NIOSH in March 1988. The RFA was reissued in March 2000 to update program requirements and funding. As of July 2008, twelve grantees listed in Table I are carrying out continuing education training programs.

Figure I lists the number of hazardous substance training courses offered by twelve ERCs and the number of trainee-days over the last 19 yr. period. A total of 2,187 courses have been offered consisting of 77,625 trainee-days. Overall, 39,870 students have completed courses. Beginning in 1991, a portion of each award to the ERCs has been specifically earmarked for trainee tuition and fee support for state and other public sector professionals. This financial assistance continues to be awarded annually by grantees. Overall, NIOSH grantees provided student support to 1,196 trainees in the current reporting period.

Table II provides a listing of courses offered by the ERCs in the ERC budget period of July 1, 2007-June 30, 2008. Courses ranged from 0.3-5 days in length, covering a diversity of topics. Several ERCs provide 8 HR, 24HR and 40 hour courses of instruction including hands-on-training which meets the OSHA requirements (29 CFR 1910.120) mandated under SARA. The courses certifying hazardous materials managers continue to be offered by several ERCs; however, during this reporting period, some new courses were conducted in updates of respirator cartridges, confined spaces, the Resource Conservation and Recovery Act, nuclear radiation security, and the transportation of dangerous goods. Courses were also conducted for Tribal groups and for a specific audience in the Chesapeake Bay area. The California/North ERC continues to focus courses on pesticide exposures in the region and present courses to a very diverse working population. The Harvard ERC tailors courses to EPA and DOT employees in the Region. They continue to offer Basic and Advanced Cameo training along with courses, such as, Radiation Safety Officer Training for Laboratory Personnel, and a four-day course, entitled, Radiological Emergency Planning: Terrorism, Security and Communication. One course, Environmental Health and Safety Academy for Educational Institutions, was conducted in New Orleans and co-sponsored by three ERCs. Three of the grantees also work jointly with NIEHS-sponsored Worker Health and Safety Training Programs by utilizing joint faculty and by providing support to state and local health and environmental professionals who attend these courses.

Courses continue to draw students from State and local governmental agencies. Profile data through 1994 from 2,343 students indicate that major employers were State Governments (22.4%), Service Industries (20.6%), Local Governments (17.2%), and Federal Government, excluding Military (6.9%). State and local governments and the private sector continue to provide most of the course trainees. No new data has been collected; however, grantees provide verbal updates at workshops and indicate that the targeted trainees continue to be State and Local Government employees.

HAZARDOUS SUBSTANCE ACADEMIC TRAINING PROGRAM (HSAT)

A. Program Characteristics

The purpose of this program is to offer a series of academic courses to prepare occupational safety and health professionals for practice, with a specialization in hazardous substances. The intent is to provide a concentration in the hazardous substance field within the academic curriculum. A 3-year developmental period was provided to include a needs assessment, curriculum development, and program implementation.

The program is intended to be a specialty area within the existing ERC Industrial Hygiene core programs. The program components include:

- A needs assessment directed to the overall contribution of the training program toward meeting the job market for qualified state, local and other professional personnel;
- A training plan to satisfy the regional needs for training;
- A formalized curriculum which includes minimum coursework toward achievement of a degree, training objectives, course descriptions, course content, and didactic and field experiences;
- A competent and experienced Program Director and staff; and
- A plan to evaluate the overall effectiveness of the training.

B. Program Update

A Request for Applications (RFA) was issued by NIOSH in August, 1992. Nine grantees were successful in receiving initial awards in February, 1993. During the first year, grantees began developing and conducting programs while carrying out needs assessments in their respective Regions. The RFA was reissued in April 2000 to update program requirements, terminology, and funding. A new review criterion was added calling for collaboration with state and Federal agencies, including EPA. As of July 2008, ten grantees listed in Table I are conducting academic training programs.

All grantees have developed an HSAT emphasis or concentration within existing programs. Trainees who enter this track must take a specific group of HSAT-related courses. Most grantees have developed new coursework and/or modified existing courses for this concentration. All trainees who are supported by the HSAT Program must successfully complete a 40-hour Hazardous Waste Operations training course, or equivalent, to meet the requirements of 29 CFR 1910.120 (e)(3)(i).

In the first full academic year (1993-94), approximately 30 students received support through this grant program. In the previous academic year (2007-2008), 45 students were supported. Table III provides a summary of recent grantee activities. The following table is a summary of grantee activities over the past 5 years (July 2003 - June 2008).

Year	# Academic Courses	# HSAT/ Total Students	# CE Courses/ HSAT Students	# HSAT Funded Students
03-04	76	146/1224	13/23	40
04-05	72	184/1238	9/15	39
05-06	69	148/962	8/14	41
06-07	78	166/1197	7/16	42
07-08	82	170/1172	12/19	46
Totals	377	814/5793	50/90	208
Mean	75	163/1159	10/18	42

2008 WORKSHOP SUMMARY

Twenty one Annual Workshops have been conducted and hosted by the grantees since the initiation of the program. The last workshop, held in Galveston, TX on February 12, 2008 provided a forum for exchange of information and issues related to hazardous substance training. At this meeting 29 faculty and Continuing Education Program Directors from both the Hazardous Substance Training (HST) and Hazardous Substance Academic Training (HSAT) Programs met jointly to discuss their programs as well as emerging issues in the field.

Overviews and updates were presented by several Agencies and Organizations, including the National Institute of Environmental Health Sciences (NIEHS), and the International Association of Fire Fighters (IAFF).

The NIEHS representative from the Superfund Basic Research Program provided background information on this program along with information on other programs such as the Individual Investigator Program, the Small Business Program and the NIOSH HST/HSAT Programs.

The NIEHS representative from the Worker Training Program presented an update of the program and discussed the types of programs receiving support and the number of workers trained (approximately 2 M). NIOSH grantees were urged to review the NIEHS website which may be of value to their programs. It was announced that a new RFA will be published in 2009 and a meeting will be held with the research component of the program in the summer of 2008.

The Program Director for the International Association of Fire Fighters (IAFF) outlined the background and status of the emergency response training program supported by NIOSH. Although an evaluation plan is ongoing, it has not been established that training enhances the work performance of the responders. An internal audit of the program was performed at the request of the IAFF Advisory Board and concluded that peer training was a major strength of the program while lack of a regular evaluation of the instructor cadre was considered a weakness. The Director also outlined their work with NIOSH and their focus on

occupational cancers in firefighters.

There were several highlights in the workshop program. The Industrial Hygiene Program Director at Tulane University provided updates on Katrina in several areas: the cleanup process, including schools; the state of the homeless population; the distribution of hazardous wastes; the rebuilding efforts; and, the ongoing exposure surveys being conducted. There continues to be a great deal of work to be performed in future years.

The Director of the New York/New Jersey HST continuing education program provided a review of a three day "Toxic Tour" of industries and sites conducted throughout the Northeast with ERC graduate students. This was the third such trip report presented by this faculty at the NY/NJ ERC. Tours were made to historic areas, such as, The Rivers of Steel Heritage site in Pittsburgh and Greenfield Village in Michigan. This learning experience is proving to be extremely valuable to students and is being considered as an annual tour.

The HST Program Director at the University of Texas presented a slide discussion on a new environmental safety and health pilot training program for disabled veterans at the University. Funds were secured for three positions, meetings were held with a VA coordinator and interested candidates were selected for the training in occupational/environmental health, risk management and environmental protection. Following the program, recommendations were made to employers regarding the value of hiring these veterans. Since the program, two veterans have been hired by industry and a third is in the final stages of recruitment.

Both HST and HSAT grantees held business meetings prior to the general agency updates. The HSAT program grantees reported that they are in fine shape and the future is promising. They also report positive success stories. Their challenges relate to reporting issues, e.g., accurate reporting versus anecdotal reporting, and underreporting of courses including HAZWOPER training for trainees. NIOSH is working with the grantees to resolve these issues.

The HST grantees had three topics of discussion: co-sponsorship of activities and reporting to NIOSH; the format for the submission of reports to the annual workshop; and, the NIOSH policy for awarding HST scholarships/tuition. Regarding the first topic, to avoid double counting of courses conducted with other agencies, reporting of courses to NIOSH should includes both categories- dedicated courses and co-sponsored courses. The reports submitted to the annual workshop should be no more than two pages and include a narrative and table with course details. The NIOSH scholarship policy is for grantees to award funds for state and municipal workers who have urgent needs for the courses but have no funding to attend courses. Detailed minutes of the Workshop were prepared and distributed to all attendees, including academic faculty and Program Directors of both HST and HSAT programs.

SUMMARY

During the most recent year for which data is available, the following program outputs were established:

1. For the HST Program (2007-08 academic year)

    - 12 ERC grantees participated in the Program
    - 4,895 trainee-days of training were delivered
    - 136 courses were presented
    - 3,014 persons were trained
    - $145 was the average cost/trainee-day*

2. For the HSAT Program (2007-2008 academic year)

    - 11 ERC grantees participated in the Program
    - 78 academic courses were presented
    - 1197 graduate students were trained, including 166 students receiving trainee financial support
    - $60,307 was the average cost/academic program*

*These costs are expressed in training grant award funds only and include the cost of trainee support.

Table I

NIOSH Hazardous Substance Training (HST) and Hazardous Substance Academic Training (HSAT) Program Grantees

1. Grantee: Alabama Education and Research Center
University of Alabama at Birmingham
School of Public Health
1665 University Blvd.
Birmingham, AL 35294-0022

Center Director: R. Kent Oestenstad, Ph.D.
HST Program Director: Elizabeth H. Maples, Ph.D.
HSAT Program Director: Claudiu Lungu, Ph.D.

2. Grantee: Northern California Education and Research Center
University of California, Berkeley
School of Public Health
140 Warren
Berkeley, CA 94720-7360

Center Director: John R. Balmes, M.D.
HST Program Director: Barbara Plog, MPH

3. Grantee: Southern California Education and Research Center
University of California, Los Angeles
School of Public Health
650 Young Drive South
Los Angeles, CA 90095-1772

Center Director: William C. Hinds, Sc.D.
HST Program Director: Cass Ben-Levi, MPH
HSAT Program Director: Nola Kennedy, Ph.D.

4. Grantee: Cincinnati Education and Research Center
University of Cincinnati
Department of Environmental Health
3223 Eden Ave.
P.O. Box 670056
Cincinnati, OH 45267-0056

Center Director: Carol H. Rice, Ph.D.
HSAT Program Director: Carol H. Rice, Ph.D.

5. Grantee: Harvard Education and Research Center
Harvard School of Public Health
665 Huntington Avenue
Boston, MA 02115

Center Director: David C. Christiani, M.D.
HST Program Director: Stephen N. Rudnick, Sc.D.
HSAT Program Director: Stephen N. Rudnick, Sc.D.

6. Grantee: Johns Hopkins Education and Research Center
Bloomberg School of Public Health
Johns Hopkins University
615 N. Wolfe St.
Baltimore, MD 21205

Center Director: Jacqueline Agnew, Ph.D.
HST Program Director: **Mary Doyle, MPH**

7. Grantee: Illinois Education and Research Center
University of Illinois at Chicago
School of Public Health
2121 W. Taylor St.
Chicago, IL 60612-7260

Center Director: Lorraine M. Conroy, Sc.D.
HST Program Director: **Leslie A Nickels, MEd**
HSAT Program Director: **Steven Lacey, Ph.D.**

8. Grantee: Michigan Education and Research Center
University of Michigan
School of Public Health
1420 Washington Hts.
Ann Arbor, MI 48109-2029

Center Director: Thomas G. Robbins, M.D.
HSAT Program Director: **Stuart A. Batterman, Ph.D.**

9. Grantee: Minnesota Education and Research Center
University of Minnesota
School of Public Health
Box 197, 420 Delaware St., N.E.
Minneapolis, MN 55455

Center Director: Susan G. Gerberich, Ph.D.
HST Program Director: Ruth Rasmussen**, MS, MPH**
HSAT Program Director: **Peter C. Raynor, Ph.D.**

10. Grantee: New York/New Jersey Education and Research Center
Mt. Sinai School of Medicine
One Gustave L. Levy Pl.
P.O. Box 1057
New York, NY 10029-6574

Center Director: Jacqueline Moline, M.D., MSc
HST Program Director: **Mitchell Rosen, MS (Univ. of Medicine & Dent. of New Jersey)**
HSAT Program Director: **Mark Goldberg, Ph.D. (Hunter College)**

11. Grantee: South Florida Education and Research Center
University of South Florida
College of Public Health
13201 Bruce B. Downs Blvd.
Tampa, Fl 33612

Center Director: Thomas Bernard, Ph.D.
HST Program Director: Hana Osman, Ph.D.

12. Grantee: Texas Education and Research Center
UTH-HSC
School of Public Health
P.O. Box 20186
Houston, TX 77225

Center Director: Sarah A. Felknor, Ph.D.
HST Program Director: Robert Emery, Dr.PH

13. Grantee: Utah Education and Research Center
University of Utah
School of Medicine
391 Chipeta Way
Salt Lake City, UT 84108

Center Director: Kurt Hegmann, M.D., MPH
HST Program Director: Connie Crandall, MBA
HSAT Program Director: Rodney R. Larson, Ph.D.

14. Grantee: Washington Education and Research Center
University of Washington
School of Public Health and Community Medicine
P.O. Box 357234
Seattle, WA 98195-7234

Center Director: Noah S. Seixas, Ph.D.
HST Program Director: Steve Hecker, MSPH
HSAT Program Director: John C. Kissel, Ph.D.

TABLE II

Hazardous Substance Training Courses Conducted by ERCs – Budget Period 2007-2008 *

- **Respirator Fit Testing Workshop (1 day)**
- **Respiratory Protection Program (3 days)**
- **Alabama Public Employees Safety Conference (1 day)**
- **Air Sampling for Toxic Substances (2.5 days)**
- **Air Sampling Workshop-In-House INVISTA (1 day)**
- **NIOSH ERC Regional Seminar and Research to Practice Symposium (1 day)**
  (Day 1 HST- cosponsored with UNC and S. Florida ERCs)
- **EHS Academy for Educational Institutions (3 days)**
  Co-sponsored with Southwest ERC
- **Hazards of Pesticides to Emergency Response Personnel (.7 days- 3 courses)**
- **Change Out Schedules for Chemical Cartridge Respirators and Respirator Update (2 days)**
- **Recognition, Management and Reporting of Pesticide Illnesses**
  (.2 days- 2 courses)
- **Certified Hazardous Materials Manager Review (3 days)**
- **40-Hour HAZWOPER (5 days)**
- **Confined Space Awareness for Managers (1 day)**
- **Introduction to CAMEO (1 day)**
- **Basic Hands-On CAMEO Training (3 days)**
- **Advanced Hands-On CAMEO Training (3days)**
- **Integrated Emergency Planning : A Step-by-Step Approach to "One Plan" (1 day)**

- **Radiation Safety Officer Training for Laboratory Professionals (5 days)**
- **Radiological Emergency Planning: Terrorism, Security and Communication (4 days)**
- **8 Hour Emergency Response Refresher (1 day- 2 courses))**
- **8 Hour Awareness (1 day)**
- **8 Hour HAZWOPER Refresher (1 day- 2 courses)**
- **8 Hour Supervisor Course (1 day)**
- **Permit Required Confined Space Training (2days)**
- **Hazard Communication (.4 days- 3 courses)**
- **Pesticides and the Chesapeake Bay Watershed (1 day)**
- **Principles of Environmental Health (10 days)**
- **White Bear Lake AWAIR and Confined Spaces (.5 days)**
- **HST Air Force 8 Hr. Course (1 day)**
- **Confined Space Course (1 day)**
- **HST Personal Protective Equipment (Tribal) (1 day)**
- **HST Respiratory Protection (Tribal) (1 day)**
- **Resource Conservation and Recovery Act (1 day)**
- **Annual Refresher for Health and Safety for Hazardous Waste Site Investigation Personnel (1 day- 2 courses)**
- **HAZWOPER 40 HR. (5 days- 2 courses)**
- **HAZWOPER 8 HR Refresher (1 day- 2 courses)**
- **HAZWOPER Site Supervisor (1 day- 2 courses)**
- **Confined Space (1 day- 2 courses)**
- **Certified Hazardous Materials Manager Course (3 days)**
- **EHS Academy for Educational Institutions (Houston) (5 days)**

- **EHS Academy for Educational Institutions Condensed (New Orleans)**
  (3 days)
- **EHS Academy for Live Performance-Educational Institutions (2 days)**
- **Security 101 for Health and Safety Professionals (1 day)**
- **National Nuclear Security Administration Radiation Security Overview**
  (2 days)
- **Certified Hazardous Materials Manager Review (3 days)**
- **Radiation Safety Officer (5 days)**
- **Risk Communication (.5 days)**
- **Chemistry for the Non-Chemist (1 day)**
- **Chemical Compatibility and Storage (1 day- 2 courses)**
- **DOT Hazardous Material Transportation (2 days)**
- **DOT Hazardous Materials Refresher ((1 day)**
- **Hazardous Materials Technician (1 day)**
- **Respiratory Protection (.5 days)**
- **Intermediate Industrial Toxicology and Quantitative Risk Assessment**
  (3 days)
- **Air Monitoring for Toxic Substances (2 days)**
- **Respiratory Protection and Fit Testing (2 days)**
- **40 Hour Respiratory Protection (5 days)**
- **Transportation of Dangerous Goods: Compliance with International Air Transportation Association (IATA) (3 days)**

- **Annual Hazardous Waste Refresher (1 day-8 courses)**
- **Certified Hazardous Materials Management National Overview Course (3days)**
- **Chemical Reactivity Hazards (1day-2 courses)**

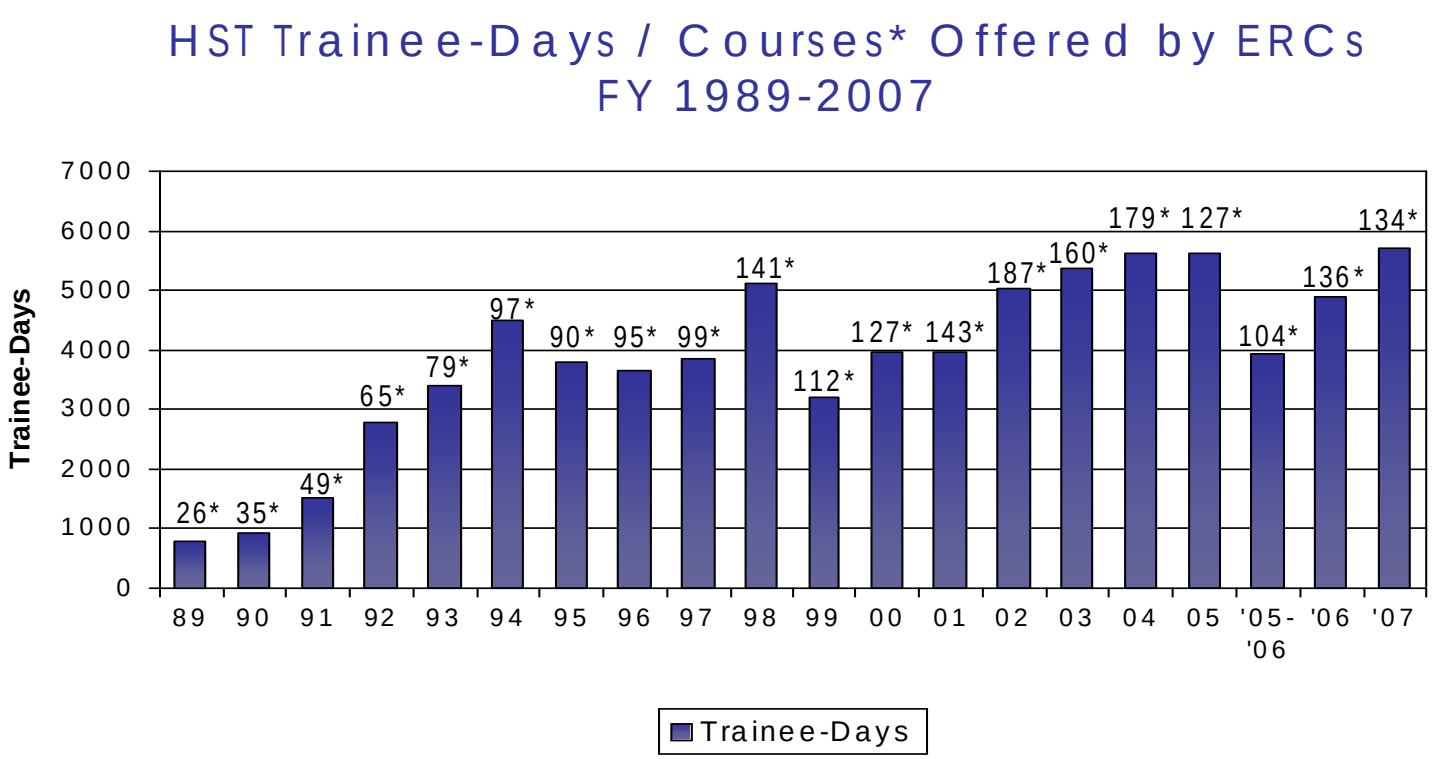
*** Reporting period for the ERC budget period of 7/1/07-6/30/08**

Table III. Summary of NIOSH ERC/HSAT Grantee Activities February 2009

ERC	Start Date	HSAT Related Courses Offered (July 2007 - June 2008)			HSAT Funded Students [2]		
		# of Academic Courses Offered [1]	# of HSAT Students/Total Students Enrolled	# of CE Courses/HSAT Students	2005-2006	2006-2007	2007-2008
AL	07-96	5	13/58	1/2	2	3	3
CA/N	07-04	5	5/66	1/1	1	1	1
CA/S	07-94	4	2/34	2/1	4	4	1
CIN	02-93	4	10/33	1/3	3	3	4
HARV	02-93	4	6/66	0/0	2	2	3
IL	02-93	15	26/169	1/1	3	4	3
MI	02-93	16	61/327	1/4	8	11	10
MN	02-93	9	11/44	2/2	3	2	5
NY/NJ	02-93	7	14/75	1/2	8	6	9
UTAH	02-93	4	8/28	1/2	3	4	4
WA	02-93	9	14/172	1/1	4	5	3
TOTALS		82	170/1172	12/19	41	42	46

[1] Does not include research and thesis courses.
[2] Includes fully funded + partially funded students

Figure I


HST Trainee-Days / Courses* Offered by ERCs
FY 1989-2007
Trainee-Days
7000
6000
5000
4000
3000
2000
1000
0
26*
35*
49*
65*
79*
97*
90*
95*
99*
141*
112*
127*
143*
187*
160*
179*
127*
104*
136*
134*
89
90
91
92
93
94
95
96
97
98
99
00
01
02
03
04
05
'05-'06
'06
'07
Trainee-Days