

Disaster Epidemiology: Applying public health tracking to emergency preparedness & climate change issues

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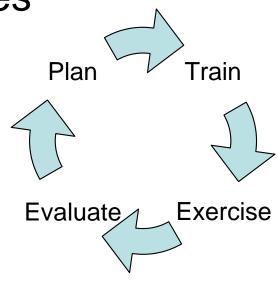


What is Disaster Epidemiology?

- The study of the impacts of emergencies & disasters on human populations
 - ~ Characterize nature & severity of outcomes
 - ~ Identify to adaptations to reduce human loss

Involves all epidemiologic disciplines

- ~ Plan
- ~ Train
- ~ Exercise/Respond
- ~ Evaluate





 Population-based information is critical to public health action



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- Data collection and analysis are linked to decision-making processes during crises
- Data inform message development, prevention recommendations & adaptations
- Follow-up and evaluation



Why Do Disaster Tracking?

- Assist with situational awareness
- Identify exposures &/or signs/symptoms early in incident
- Information about human resources needs
- Identify vulnerable populations
- Develop prevention messages
- Create population-based registry early on



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Emergency Operations Center.





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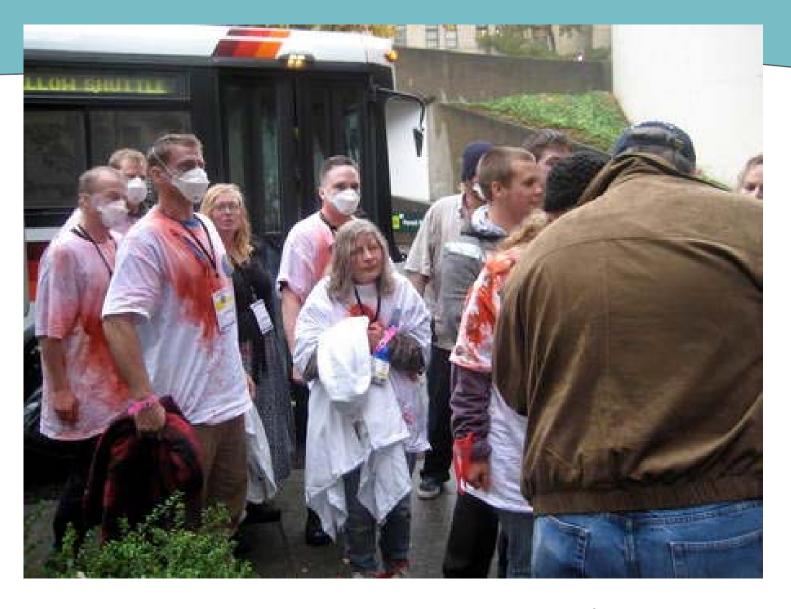
Staff in the Public Health Agency Operations Center.



Who Should We Track?

- Victims in immediate impact area
- Responders & rescue workers
- Displaced persons
- Volunteers
- Recovery workers
- Returning population (secondary impacts)





Exposed ambulatory victims being evacuated from the scene for further evaluation.









Field radiation monitoring in the blast zone.



What Do We Track?

- Demographics
 - ~ Person, contacts
- Acute effects
 - ~ Nature of illness, injury, cause of death
 - ~ Time, place, circumstances
- Interim or subsequent effects
 - ~ Chronic Disease needs
 - ~ Emotional & behavioral health needs



How & Where to Track?

- Poison Control Center data
- Hospital E.D.
- First responders
- Shelters, screening, decontamination & medical care sites
- Hot lines
- Epidemiology field teams
- Population registries
- Vital statistics, Medical Examiner



Mobile screening point for radiation exposure assessment.



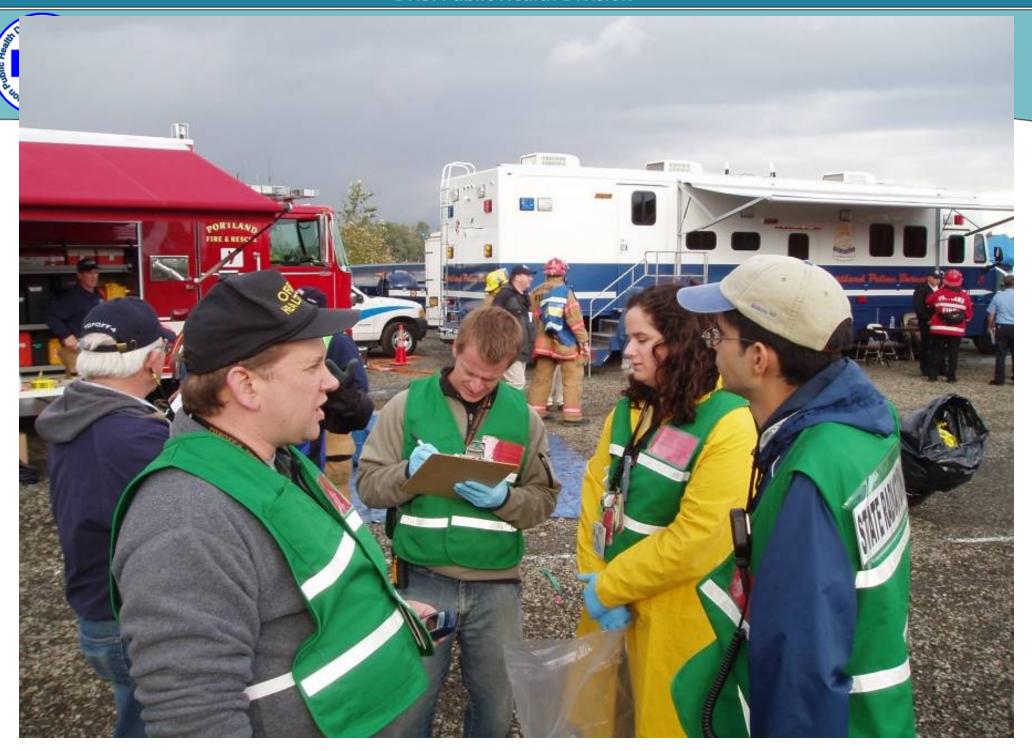


Mobile medical care point.





Receiving center. An excellent point for entering people into the incident tracking system.





Disaster Management from a Public Health Perspective

- Assess needs of disaster-affected populations
- Match available resources to those needs
- Prevent further adverse health effects
- Implement disease/injury control strategies for well defined problems
- Evaluate effectiveness of relief efforts
- Improve contingency plans for future disasters



Quantifying the Effects of a Disaster

- We can identify common patterns of morbidity and mortality following some disasters
- Better epidemiological knowledge about disaster impacts is essential
 - ~ Causes of death
 - ~ Types of injuries
 - ~ Patterns of illnesses



Each Disaster is Different

- Hazards & risk may differ by region
- Hazards & risks differ by type of disaster
- Vulnerable populations differ by locality/region & can change over time
- Morbidity & mortality patterns differ
- Impacts on society/economy/environment differ



Disaster Epidemiology Planning

- Anticipating the range of medical needs & health problems before they arise
- Understanding populations at risk before hand
- Improved understanding of health & safety issues among response/recovery workers
- Better preparation for appropriate interventions and timing/location of needed supplies



Surveillance During a

Disaster

- How much information can we realistically collect during an emergency/disaster?
- Get as much info as possible, while respecting the people affected;
 - #1 make sure people are safe
 - #2 be able to follow-up at more appropriate time
 - #3 get what you can while you can
- Not going to capture everyone, but can paint a more accurate picture and be in a better position for later follow-up by
 - using multiple tools
 - using multiple mechanisms for data collection (paper, web, phone)
 - collecting information at multiple venues



ATSDR's RRR

Form Version 050405	OMBE,NIA;-mmm, Emp. Date MM/DD/YYYY	Form Version 050405
EVENT CODE: SITE # NTERVIEWER ID DA	ATE: TIME STARTED :	±
		18. What is that person's full name?
ATSDR RAPID RESPONSE	REGISTRY SURVEY FORM	FIRST
	ng emergency-related health information, this information is	LAST
important to us and affected people. May I read you a consent st		M. I
We are getting information from people exposed to this event so		19. Whatis (his/her) home address?
services. You also may be contacted at a later date to see if you or not. If you choose to enroll, we will ask you questions that wi		STREET
question you wish. All the information will be kept confidential		CITY STATE ZIP
REGISTRANT INFORMATION	11.What is (your/registrant's) employment status?	98 □ Don't Know 99 □ Refuse to Answer
1. Do you speak English?	1 Employed, SPECIFY EMPLOYER'S NAME:	20. Whatis (his/her)
IF NO: What language do you prefer?		A. Home telephone number? () 96 □ None 98 □ Don't Know 99 □ Refuse to Answer
2. Data obtained from:	2 □ Not employed	B. Work telephone number? ()
1 🗆 Registrant	3 □ Self-employed 4 □ Not Applicable	96 □ None 98 □ Don't Know 99 □ Refuse to Answer
2 □ Proxy 3 □ Medical/Medical Examiner's/Other Record	4 □ Not Applicable 98 □ Don't Know 99□ Refuse to Answer	C. Cell/other phone number? () 96 □ None 97 □ Same as Home Phone
4 □ Other, SPECIFY:	PROXY OR CLOSE FRIEND/RELATIVE INFORMATION	
98 □ Don't Know 99 □ Refuse to answer	(If data obtained NOT from registrant, please skip to question 13.)	98 \(\text{Don't Know}\) 99\(\text{Refuse to Answer}\) 21, \(\text{Does}\) (he/she) have an email address?
3 Whatis (vouste great ant s) 100 name:	12. Is there someone who does not live with (you/registrant)	l □ Yes, SPECIFY:
arst	who can always reach (you/registrant)? 1 □ Yes	2 □ No ——————————————————————————————————
LAST	1 = 1es 2 = No	98 □ Don't Know 99 □ Refuse to Answer EXPOSURE INFORMATION
	98 □ Don't Know ► SKIP TO QUESTION 22	Now I'm going to ask you just a few questions about (your/
How old (are you/is registrant)?	99 □ Refuse to Answer	registrant's) experience with this event.
Don't Know 99 ☐ Refuse to answer	13. What is (your/that person's) full name?	22. (Were you/was registrant) exposed to this event as (CHECK ALL THAT APPLY):
⑤ If necessary:	FIRST	(CHECK ALL THAT APPLY): 1 □ A resident
1	LAST	2 🗆 A passerby
6. What is (your/Registrant's) date of birth?	M.I	3 □ An employee 4 □ A responder or rescue worker
	14. Whatis (your/his/her) home address?	5 □ A government official
ND(DD YYYY	STREET	6 □ A clean-up worker
98 □ Don't Know 99 □ Rafuse to answer		7 An non-governmental organization/site volunteer
 What is (your/registrant's) Social Security Number? (Your SSN will only be used to match our data to other health registries 	CITYSTATEZIP	98 □ Don't Know 99 □ Refuse to Answer 23. (Were you/was registrant) at the event site when the event
and will be kept confidential to the extent allowed by the law.)	95 □ Same As Registrant 98□ Don't Know 99□ Refuse to Answer	started?
	15. What is (your/his/her)	1 □ Yes 2 □ No
98 □ Don't Know 99 □ Refuse to answer	A. Home telephone number? ()	98 ☐ Don't Know 99 ☐ Refuse to Answer 24. At the start of the event on [DATE] at [TIME], at what
8 A. What is (and registrant's) nome address?	95 □ Same As Registrant 96 □ None 98 □ Don't Know 99 □ Refuse to Answer	address (were you/was registrant)?
AREET	B. Work telephone number? ()	
CITY STATE ZIP	96 \(\text{None} \) 98 \(\text{Don't know} \) 99 \(\text{Refuse to Answer} \)	98 Don't Know 99 Refuse to Answer 25. What was the name of nearest building to (you/registrant)?
CITY STATE ZIP 98 Don't Know 99 D Refuse to answer	C. Cell/other phone number? ()	25. What was the name of hearest outloing to (you/registrant):
B. How many people live at this address?	96 □ None 97 □ Same As Home Phone	98 🗆 Don't Know 99 🗆 Refuse to Answer
96 Don't Know 99 □ Refuse to answer	98 □ Don't Know 99 □ Refuse to Answer	26. What was the nearest intersection?
What is (your Roman a) A. Home telephone number? () 96 \(\times \) None \(98 \) \(\times \) Don't Know \(99 \) \(\times \) Refuse to answer	16. (Do you/does he/she) have an email address? 1 □ Yes, specify:	98 □ Don't Know 99 □ Refuse to Answer
96 \(\text{None} \) 98 \(\text{Don't Know} \) 99 \(\text{Refuse to answer} \)	2 □ No ————	27. What was the nearest landmark?
B. Work telephone number? ()	98 Don't Know 99 Refuse to Answer	<u> </u>
96 □ None 98 □ Don't Know 99 □ Refuse to answer	OTHER CLOSE FRIEND/RELATIVE INFORMATION	98 Don't Know 99 Refuse to Answer 28. At the start of the event, (were you/was registrant)
C. Cell/other phone number? (17. Is there (someone else/someone)who does not live with (you/registrant) who can always reach (you/registrant)?	(CHECK ALL THAT APPLY):
98 Don't Know 99 Refuse to answer	THIS PERSON MUST LIVE AT A DIFFERENT ADDRESS THAN	1 □ Inside a building or structure
Do you/does registrant) have an email address?	THE PERSON LISTED IN QUESTION 13.)	2 ☐ Inside a car or other vehicle 3 ☐ Outside
Yes, SPECIFY:	1 □ Yes 2 □ No	4 At some other location, SPECIFY:
2 □ No 98 □ Don't Know 99 □ Refuse to answer	98 □ Don't Know ► SKIP TO QUESTION 22	
90 U Don't Know 99 U Keruse to answer	99 🗆 Refuse to Answer	98 🗆 Don't Know 99 🗆 Refuse to Answer

orm Version 050405	OMBE_NIA2-xxxx, Exp. Date MM/DD/YYY
18. What is that person's full name?	29.As a result of the event, did (you/registrant) get injured or ill?
FIRST	1 □ Yes, DESCRIBE:
LAST	98 □ Don't Know 99 □ Refuse to Answer
	30. Before the event, did (you/registrant) have any of the
19. Whatis (his/her) home address?	following conditions? (CHECK ALL THAT APPLY)
STREET	1 □ Chronic illness
STREET	2 □ Physical disability
CITY STATE ZIP	3 □ Other disability
98 □ Don't Know 99 □ Refuse to Answer	4 □ None
20. Whatis (his/her)	98 □ Don't Know 99 □ Refuse to Answer
A. Home telephone number? ()	31. Please describe your condition:
96 □ None 98 □ Don't Know 99 □ Refuse to Answer	or reas describe your condition
B. Work telephone number? ()	
96 □ None 98 □ Don't Know 99 □ Refuse to Answer	
C. Cell/other phone number? ()	32. IF REGISTRANT IS FEMALE LESS THAN 12 YEARS OLD OR
96 🗆 None 97 🗆 Same as Home Phone 98 🗆 Don't Know 99 🗆 Refuse to Answer	MALE, SKIP TO QUESTION 33. OTHERWISE ASK: (Are you/is registrant) pregnant?
1. Does (he/she) have an email address?	l □ Yes 2 □ No
1 \(\sum \) Yes, SPECIFY:	98 □ Don't Know 99 □ Refuse to Answer
2 □ No -	33. As a result of this event, (are you/is registrant) personally in
98 🗆 Don't Know 99 🗆 Refuse to Answer	need of any of the following? (CHECK ALL THAT APPLY):
EXPOSURE INFORMATION	1 □ Medications/supplies 2 □ Medical care
Now I'm going to ask you just a few questions about (your/	
registrant's) experience with this event.	3 □ Water 4 □ Food 5 □ Shelter 6 □ Utilities
22. (Were you/was registrant) exposed to this event as (CHECK ALL THAT APPLY):	/ □ Other, SPECIFY:
1 □ A resident	8 🗆 None
2 🗆 A passerby	98 🗆 Don't Know 99 🗆 Refuse to Answer
3 □ An employee	34. Which best describes the level of health insurance (you have
4 □ A responder or rescue worker	registrant has)?
5 □ A government official	1 □ Full or comprehensive 2 □ Partial or limited
6 A clean-up worker	3 □ None
7 □ An non-governmental organization/site volunteer 98 □ Don't Know 99 □ Rafuse to Answer	98 □ Don't Know ► SKIP TO QUESTION 36
23. (Were you/was registrant) at the event site when the event	99 □ Refuse to Answer
started?	35. Please give me the name of your health insurance plan.
1 □ Yes 2 □ No	
98 🗆 Don't Know 99 🗆 Refuse to Answer	36. Event-specific question 1.
24. At the start of the event on [DATE] at [TIME], at what	1
address (were you/was registrant)?	3 □ Response Option 3 4 □ Response Option 4
00 T D 1 T 00 T D 0 1 T	5 □ Response Option 5 6 □ Response Option 6
98 □ Don't Know 99 □ Refuse to Answer 25. What was the name of nearest building to (you/registrant)?	98 Don't Know 99 Refuse to Answer 37. Event-specific question 2.
so, what was the name of hearest outland to (you regist ant).	1 G Remonte Option 2
98 □ Don't Know 99 □ Refuse to Answer	1 ☐ Response Option 1 2 ☐ Response Option 2 3 ☐ Response Option 3 4 ☐ Response Option 4
6. What was the nearest intersection?	5 □ Response Option 5 6 □ Response Option 6
	98 □ Don't Know 99 □ Refuse to Answer
98 □ Don't Know 99 □ Refuse to Answer	That completes our interview. Thank you very much for your time.
27. What was the nearest landmark?	
	TO BE COMPLETED BY INTERVIEWER
98 □ Don't Know 99 □ Refuse to Answer	38. INDICATE THE SEVERITY OF THE EFFECT ON REGISTRANT
 At the start of the event, (were you/was registrant) (CHECK ALL THAT APPLY): 	1 □ No Obvious Effect
1 ☐ Inside a building or structure	2 Affected, Ambulatory
2 ☐ Inside a car or other vehicle	3 🗆 Unconscious, Non-Ambulatory, Or Badly Injured/Ill
3 □ Outside	4 □ Dead
4 At some other location, SPECIFY:	5 □ Not Applicable 98 □ Don't Know
00 T D-24 V 00 T D-6 A	70 = Don Chillow
98 🗆 Don't Know 99 🗆 Refuse to Answer	



Oregon's Registry Short Form

NCIDENT NAME		SITE	I	ATE	INTERVIEWE	R
	RADIATIONE	XPOSURE O	CONTACT SHO	ORT FOR	M	
Identification (ch	eck one and write in num	ıber)				
			☐ Drivers	License		
☐ Rapid Scre			☐ Other (d	escribe)		
		RSONAL IN	FORMATION			
			Home Email			
			Work Email			
			Home Dhone			
City			1			
	Zip		Work Phone Other Phone			
How many people	e live at this address?		Other Phone			
Date of Birth (mr	or, Age (in ye)	Sex (circle on	e) Male	Female Unkno	wn
//	Or, Age (III ye	ears)	If female, kn	own to be p	regnant? (circle) 1	es No <u>Unk</u>
	EMERGE	NCT CONT	ACT INTURAL	ATION		
Emergency Contact Name			If same as above, write "same" and go to next question.			
First Name			Home Email			
	Last Name M. I			Work Email		
If same as informant, check here and go to next question □			If same as informant, check "same" and go to next question.			
Street Address			Home Phone an			□ same
City				hone □ sam		
State	Zip		Other Phone			□ same
		EXPOSURE	DETAILS			
Location	n/Proximity to the event of	o.n.	Physical locat	ion on [D.	ATE] at [TIME] (cl	heck one)
1	[DATE] at [TIME]	on .		rside a building ☐ Inside a vehicle		
	[DATE] at [TIME]		□ Outside	☐ At another location (specify)		
Address						
OR OR			Reason for be	r being at the location described on		
	ion			[TIME] (check all that apply)		
OR			☐ A reside			
			☐ A passer			
OR			□ An employee □ A non-governmental			
Nearest Landmark			☐ A responder or rescue worker volunteer			
			D BY EVALUA			
Exposure location			tion status	Injury st	atus	
☐ Blast Zone	Zone 3	□ None	and a status		vound (non-critical)	
☐ Zone 1	□ Zone 4	☐ External contamination ☐ Burn (non-critical)		,		
□ Zone 2	□ Outside Plume		contamination	☐ Other (describe)		
					/	

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Oregon's Rapid Registry List

This form is to be used at all Medical Care Points and Emergency Departments by Public Health Department designees. All individuals requesting medical assistance at these locations in response to injuries or exposures related to the [WRITE EVENT NAME HERE] event on [DATE] at [TIME] should be recorded

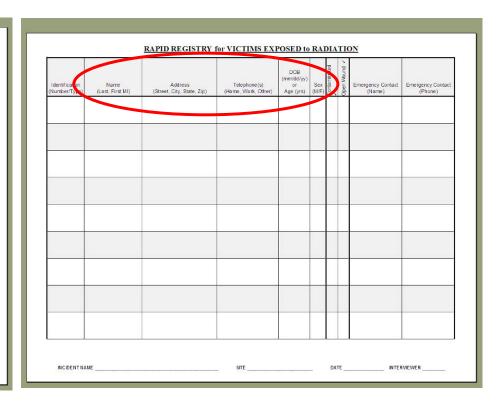
Use a separate line for each individual registering at this location. For household members, please use tick-marks (") to indicate duplicate information (e.g., address, telephone, or emergency contact info).

If a person is coming into the location with a unique form of identification, please record that in the first box on the left. Be sure to document the identification number as well as type (e.g., Oregon driver's license, SSN, registration tag, or triage tag).

Please complete as much of the form as possible before sending the individual to the next check point.

Before turning a comleted form in to the either the state or local Public Health Division, please complete the footer section of the form by documenting the name of the incident, the site/location where the form was completed, the date, and your name or initials.

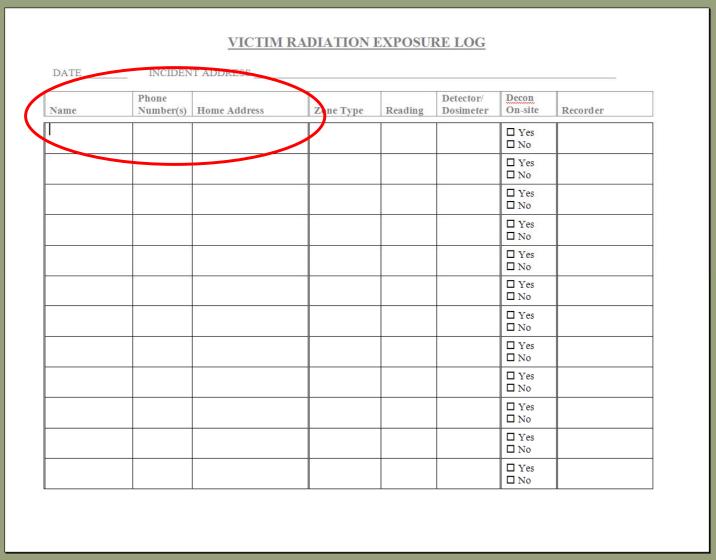
For questions on completing this form, please call: 971-673-1111





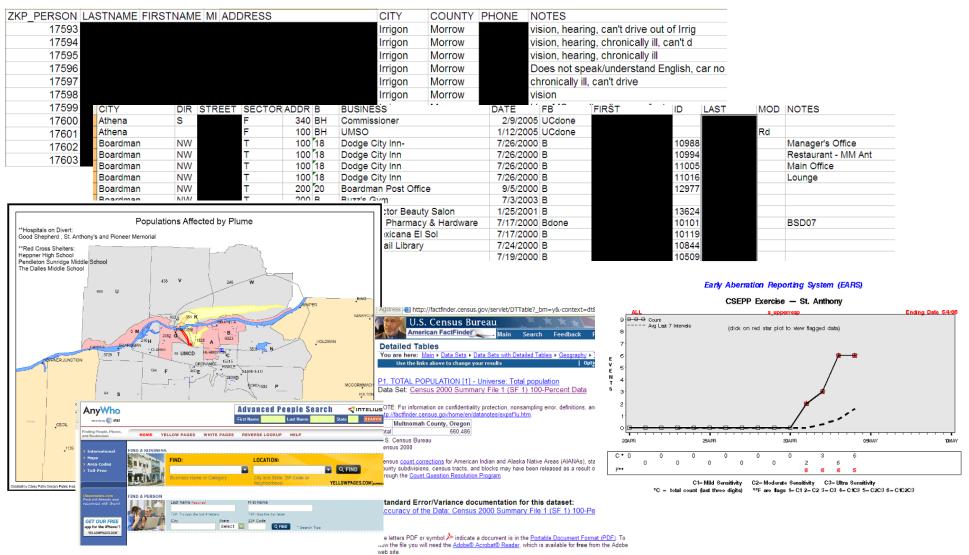
Oregon's Victim Exposure

Log



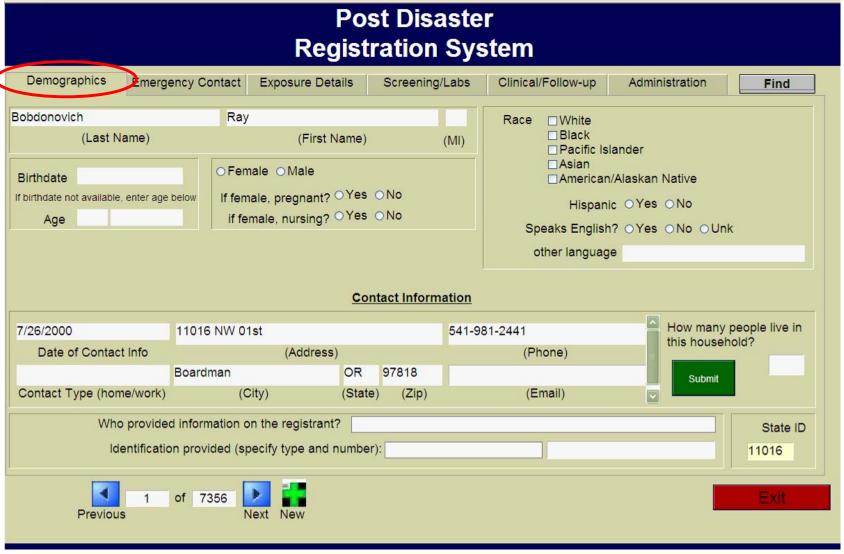


Integrating Other Data Sources





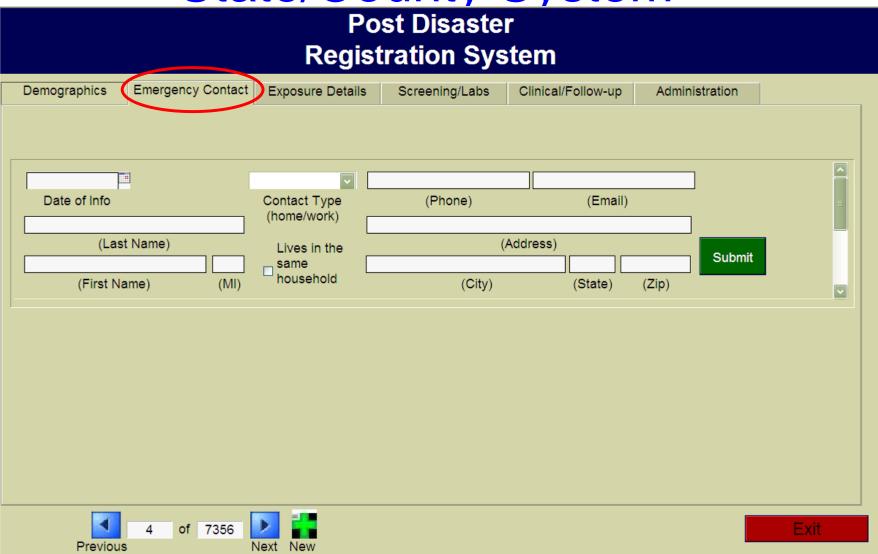
Post Disaster Registration State/County System





Post Disaster Registration

State/County System



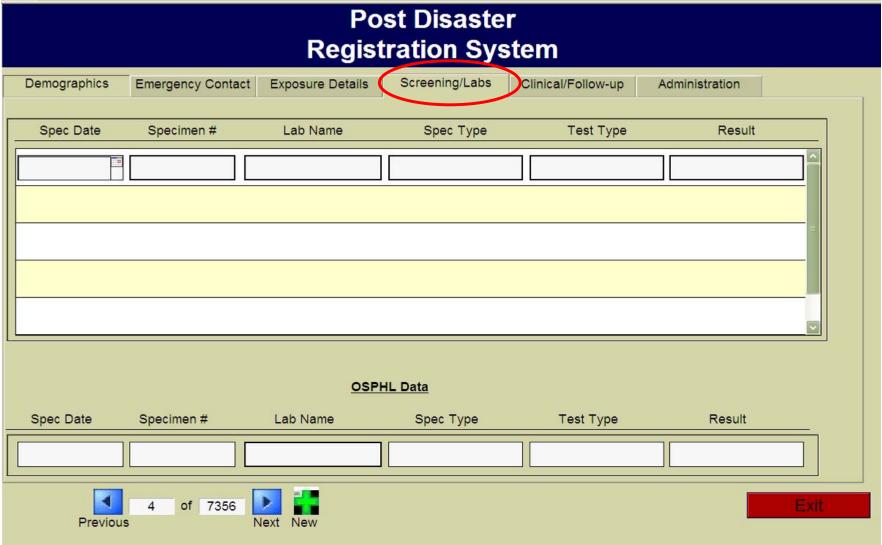


Post Disaster Registration State/County System

				Pos	st Disaste	er			
			Re	gist	ration Sy	stem			
Demographics	Emergency	Contact	Exposure De		Screening/Labs		/Follow-up	Adr	ministration
Ì	Where was specific: land Reason for Physical locat	s this person marks, mile being at the	n exposed? posts, etc.) is location? of exposure						Based on this information and the description of the plume select the appropriate exposure zone
Time at exposure z		ide a car, in	a building)	Duratio	on in exposure zone)		V	
Co	ntamination	/De-con				<u> </u>	Post Expos	ure	
Contamina	ited OYes	No OUnk	:		Post exposure	e instruction	ns		
Contamination Mor	nitor Yes (○No ○Unk	:			sure locatio d victim goʻ			
If yes, whe	ere?					ure behavio d victim do			
				,	<u>Notes</u>				
Previous		7356 Ne	xt New						Exit



Post Disaster Registration State/County System





Post Disaster Registration

State/County System

Post Disaster Registration System								
Demographics	Emergency Contact	Exposure Details	Screening/Labs Clir	nical/Follow-up	dministration			
Clinical Info Signs/Symptoms								
Triage Sta Hospital (or clinic or urgent c Specify locat	ized are) OYes ONo OL tion:		Injuries sustained from 6 Symptoms resulting from the 6 Other clinical signs of 6	exposure				
Preexisting condition Special			Cannot append supporting documentation over the web.		mentation (electronic	c files)		
(Date of fol	Q2 Q3		Q5 Q6	Q8 Q9				
Q1 Notes	Q4		Q7	Q10				
Previous	4 of 7356	Next New				Exit		



Post Disaster Registration State/County System

Post Disaster Registration System								
Demographics	Emergency Contact	Exposure Details	Screening/Labs	Clinical/Follow-up	Administration			
Export function work over	ality does not the web.	ormation provided?						
					County MORE	ROW		
Previou	4 of 7356 s	Next New			ı	Exit		

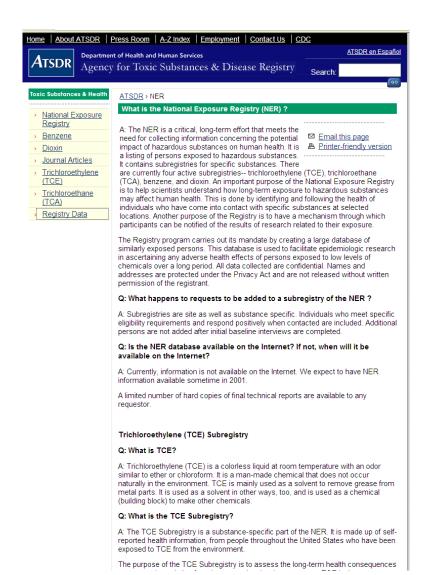


Post Disaster Registry – Public/Self-Registry

	Post Disaster Registration System	
(Last Name) Birthdate	(First Name) (MI) Female Male If female, are you pregnant?	⊙Yes ⊙No
	Contact Information	
(Address)	(Phone) live	many people in this sehold?
(City) (Stat) (Zip) (Email)	
	Exposure Detaile	
Where do you think you w (be specific: landmarks, m		
Why were you there?		V
Exactly where were you? (e.g., inside a car, in a bui	ding)	V
What time were you there?	How long were you there'	?
Where did you go from the	re?	
What did you do after you		
Additional Comments:		
	Submit & Exit	Exit



Then What?



Long term, even short term, monitoring of individuals affected by a disaster will quickly overwhelm local and state resources

Who will be responsible for this monitoring?

Who will maintain the registry?



Contact Information

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