

SURVEY OF X-RAY PROGRAMS OF THE UNITED STATES AND PUERTO RICO

**Conducted by Richard A. Ratliff
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SURVEY OF X-RAY PROGRAMS OF THE UNITED STATES AND PUERTO RICO

DESCRIPTION OF SURVEY

A survey of the X-ray Regulatory Programs of the United States and Puerto Rico was conducted by Richard A. Ratliff, P.E., Chief, Bureau of Radiation Control, Texas Department of Health. Respondents replied to a questionnaire attached as an appendix to this report. All queried replied with the exception of Wyoming, a state that does not have an x-ray regulatory program.

REVIEW AND ANALYSIS

A review team was asked to analyze the information and make recommendations for the Texas program based on precedents set by other states and the ideas of the review team.

Review Team Members

June Ayers
Debbie Borden
Margaret Henderson, Team Leader
Johnny Lairsey
Jim Ogden
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Linda Volek

RECOMMENDATIONS

This report presents the recommendations of the team and summarizes the review of the state programs.

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APPLICATION PROCESS

INTRODUCTION

This survey was conducted to see how the Texas x-ray registration program compared to other state programs in an attempt to provide better service to TDH customers. Letters were sent to all 50 states and the territory of Puerto Rico. A copy of the letter is in the Summary Tables section at the conclusion of this report. Fifty-one respondents included 49 states, 1 territory (Puerto Rico) and New York City. (Note: Wyoming does not have an x-ray program and did not respond; New York State and City both have programs and did respond.)

SCOPE OF REGISTRATIONS

X-ray equipment is registered by 100% of the 51 respondents. Forty-six provided a copy of their registration application form. In addition to the basic information such as name, address, telephone, radiation safety officer, 27 other significant items were asked by those surveyed.

Significant Items on Registration Form

type of use	installer name
manufacturer	date of inspection and by whom
model	disposal
number of tubes	certification
number of machines	views
kVp and mA	collimation
location of machine in the facility	supplier
tube serial number	processor
control serial number	film brand
date of purchase	cassette brand
from whom purchased	service agent
new or used	workload
date manufactured	
date installed	

Process methods noted were:

- using "carbon copies" of the form
- including billing with the application
- creating and issuing permits

Permits were created and issued by 52% of those responding. The remainder either issued no acknowledgement or used a variety of methods such as:

- one copy of the carbon application form or a validated application form
- a billing receipt
- a post card notice
- or a cancelled check or invoice

Six issued nothing at all.

Billing was included on applications for 15% of the respondents. Carbon copy forms were used by 17% of the respondents.

HOW TEXAS COMPARED

The Texas application form asked 9 of the 27 items. Seven respondents asked for more detail than did Texas, 5 asked the same number of details, and 34 asked for fewer details. Of the items asked on the Texas forms, shown on the table below, the percentage of states asking them is also noted.

TYPE OF INFORMATION REQUESTED BY TEXAS

Category of Information	Percent of States Asking
type of use	100
model	65
manufacturer	61
control serial number	52
location of machine in facility	46
kVp and mA	37
number of machines	37
number of machines stored	11
disposal of machines	9

The Texas review team agreed that the additional information was not relevant to the Texas program with one exception. The number of tubes, asked by 70% of the 51 respondents, would be important to know. Inspectors would find this valuable when preparing for inspections; it could also be of value to billing if methods of charging changed to *per tube* rather than *per control panel*.

Two items on the Texas registration form, the location of each machine and the kVp and mA, were considered no longer necessary.

From examining application forms submitted to the survey team, discussion noted that:

The RSO is an essential item to have on the registration form; The number of stored machines should be required on the form.

Billing included on the application would be difficult for first applications, but good to have associated with the registration. The time elements of billing and renewal do not coincide; therefore this does not appear achievable for Texas.

The Fee Summary which is sent to Texas applicants may be somewhat unclear as additional calls frequently result. A streamlined form with an equation for easy calculation would be a good improvement. Formats from the States of Oklahoma and North Dakota may serve as good examples.

Compared with other forms used, the single page Texas form, with instructions on the reverse appears clear, understandable and simple to complete. Sometimes errors in use codes are made by registrants; this should be clarified on the form.

Some differences between states were discussed:

The team noted that additional information some other states request might be important if 3rd party inspectors were used; however currently, it was not significant for Texas.

Also, billing indicates that some states charge fees based on tubes rather than control panels. This should be considered by Texas.

One state included an order form and costs for additional copies of the regulations. Texas might consider this approach.

Although some other states send short notices of registration, the Texas inventory list is considered essential for accounting and inspection purposes for:

- * billing accuracy
- * reduced discrepancies because the same information is provided the registrant, inspector, and billing staff
- * highlighted changes in inventory for review of transfer/disposal records and billing adjustments

The bureau should solicit comments on the importance of this listing from registrants, inspectors and fee collection staff members to determine the actual benefit of this inventory.

EXHIBITS

The following tables and graphs give comparisons of programs.

SURVEY OF STATE X-RAY REGULATORY PROGRAMS
NUMBER OF SIGNIFICANT ITEMS ASKED
REGISTRATION FORM

STATE	# ITEMS ASKED
MISSOURI	14
IOWA	13
INDIANA	12
MAINE	12
VIRGINIA	11
MISSISSIPPI	10
COLORADO	10
HAWAII	9
ARIZONA	9
KENTUCKY	9
ILLINOIS	9
TEXAS	9
MICHIGAN	8
S CAROLINA	8
WISCONSIN	8
MONTANA	8
N CAROLINA	8
NEW MEXICO	8
MARYLAND	8
NEBRASKA	8
N DAKOTA	7
DELAWARE	7
ALASKA	7
CALIFORNIA	7
ALABAMA	7
LOUISIANA	7
NEVADA	6
UTAH	6
ARKANSAS	6
FLORIDA	6
IDAHO	6
MINNESOTA	6
GEORGIA	5
PENNSYLVANIA	4
NEW YORK STATE	4
TENNESSEE	4
NEW HAMPSHIRE	3
KANSAS	3
VERMONT	3
W VIRGINIA	2
WASHINGTON	2
NEW YORK CITY	2
OHIO	2
MASSACHUSETTS	2
CONNECTICUT	2
OKLAHOMA	2

SURVEY OF 50 STATES
AND PUERTO RICO
X-RAY REGULATORY PROGRAMS
SUMMER 1996

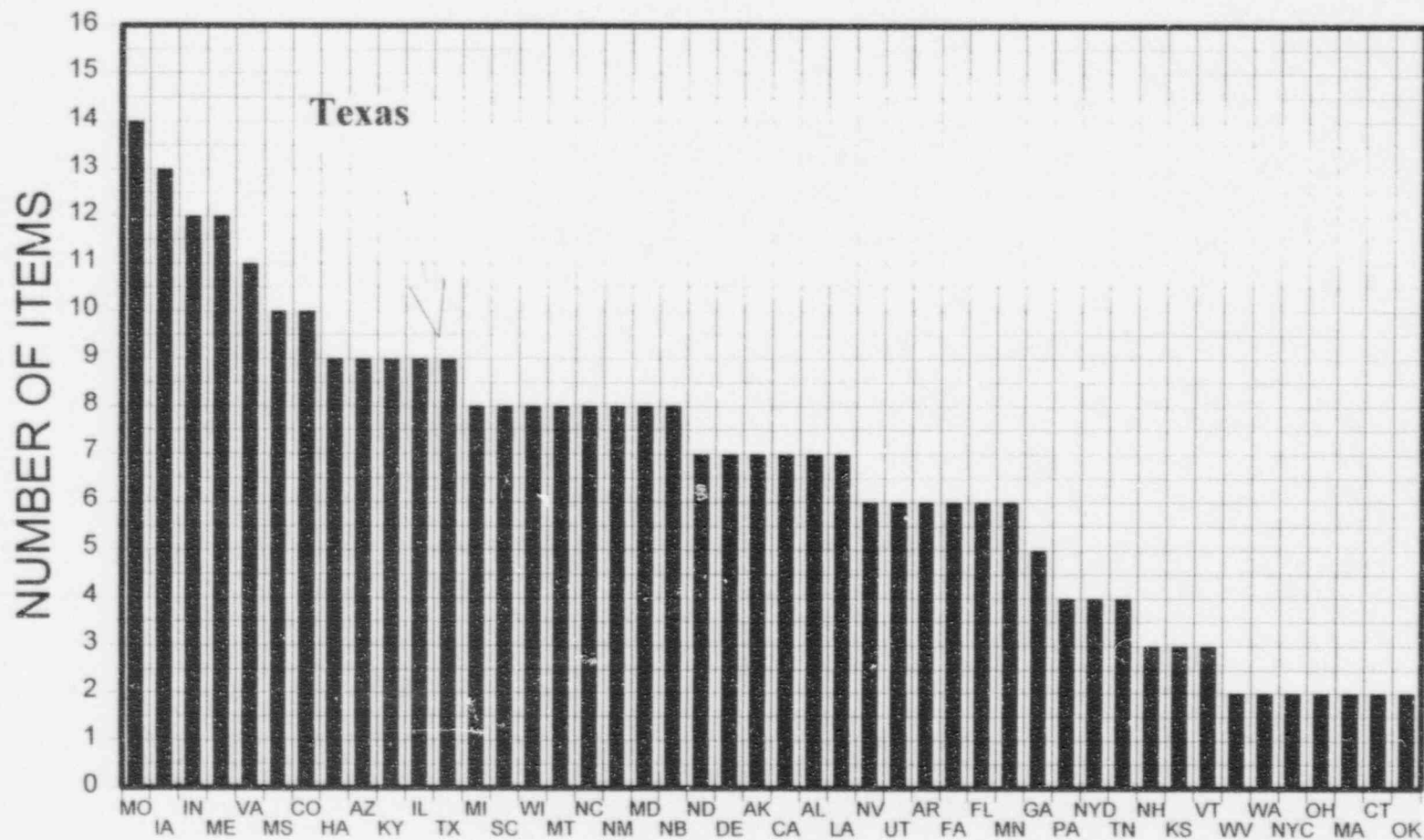
REGISTRATION METHODS

ITEMS ASKED	% OF STATES REQUESTING
* type of use	100
# tubes	70
* model	65
* manufacturer	61
* control serial	52
* location	46
* kVp & mA	37
* # machines	37
tube serial	30
date installed	20
date manufactured	17
* # machines stored	11
* disposal	9
installer	7
date of insp & by whom	7
from whom gotten	7
date of purchase	7
collimation	4
processor	4
film brand	2
workload	2
service agent	2
cassette brand	2
new or used	2
certification	2
supplier	2
views	2

METHODS	PERCENT USING METHOD
carbon copy r. gistration form	17
billing included	15
* issue permit in response	52

* Includes Texas

NUMBER OF SIGNIFICANT ITEMS REQUESTED X-RAY REGISTRATION



INSPECTION PROCESS

SCOPE OF INSPECTION PROCESS AND GENERAL COMMENTS

In most states, x-ray equipment is inspected by state personnel. Five states use third party contractors to perform inspections. Thirty-one of the respondents provided a copy of their inspection forms. Twenty-five states also provided separate forms for dental and veterinary inspections. In addition to the basic information such as name, address, telephone, radiation safety officer, other significant items were noted on the inspection forms. For review purposes, general radiographic, dental and veterinary, and therapy equipment inspection forms were grouped. Within these groups, items were categorized into three sections with the following items:

GENERAL RADIOGRAPHIC

Technical Machine Data

- make
- model
- serial number
- type
- mobile/portable
- timer accuracy
- half value layer
- linearity
- collimation
- labels
- SID
- kVp
- exposure reproducibility

Radiation Health & Safety

- scatter
- public exposure
- technician credentials
- personnel monitoring
- date of inspection and by whom
- entrance skin exposure
- protective devices
- shielding
- technique chart

GENERAL RADIOGRAPHIC - CONT'D

Records

- copy of the rules
- notice of violation
- correspondence
- operating and safety procedures

Facility Data

- Notice of Violations (NOV) at exit
- exit summary

Quality Control

- posting
- processor
- compliance testing

Other

- third party inspectors

DENTAL AND VETERINARY

Technical Machine Data

- timer accuracy
- timer reproducibility
- source to image distance
- labels
- half value layer
- control panel
- collimation

Radiation Health & Safety

- operator safety (i.e. restrictions for hand holding;
minimum distance requirements)
- protective devices
- technologist credentials
- ESE to limit
- ESE by kVp

DENTAL AND VETERINARY

Records

- copy of the rules
- notice of violation
- correspondence
- operating and safety procedures

Facility Data

- NOV at exit
- exit summary

Other

- third party inspectors

THERAPY

The states which inspected therapy equipment, categories requested conformed with Conference of Radiation Control Program Directors suggested state regulations.

GENERAL COMMENTS

Inspection forms were reviewed noting what aspects were examined. How the items were checked is not noted in this report.

In general, several states use forms patterned after the FDA's Level II test sheets. These are somewhat difficult to read.

North Carolina's guide has "cost to have printed" on the published guide. (It appears to be a copy of the Texas regulatory guide.)

The Illinois forms are printed in blue ink and are especially easy to read. Some states have forms with print which is too small or layout of information which makes them difficult to use.

Illinois has single page inspection forms for each category of industrial inspection. These would be good to use as possible guides in developing new industrial forms for Texas.

Missouri has one form for all uses and machines. The form is complex because of the numbers of items requested.

CATEGORIES OF REGISTRANTS

New York State has two guides for Radiation Safety/Quality Assurance. One is for "small facilities" defined as taking less than 2500 diagnostic radiographs per year. Requirements for recordkeeping and some technical factors vary significantly. For instance, twice as many records are required for a large facility.

NOTICE OF VIOLATIONS

New Mexico, Washington, Michigan, Georgia, Florida and New York City use their inspection form as the Notice of Violation. The form is signed by the inspector and the registrant's representative. Responses to the violations are due within specified time limits.

New York City and Washington have forms with preprinted violations which are checked to indicate which apply based on inspection results. Maryland and New York City have wording particularly appropriate for the exit summary which includes a Notice of Violation.

CONTENT OF INSPECTIONS

In general, most states do not appear to be inspecting for as many elements as Texas. Rules in Texas may be more detailed than other states thus requiring more depth of inspection. During General Radiographic Inspections, Texas examined 26 items reviewed by the team whereas other states examined fewer of the items. In Dental and Veterinary Inspections, 18 items were examined. Again, other states examined fewer items.

Less Detailed than Texas

Missouri asks less on therapy than does Texas.

Some states, Oklahoma for example, do shorter inspections on dental facilities than does Texas.

Louisiana is an example of a simplified fluoroscopic unit inspection.

South Dakota's form does not include checking technique charts.

More Detailed than Texas

Illinois includes information on "inventory change" on the inspection report for dental facilities.

New York State requires 10 exposures for reproducibility for dental units as does the FDA.

Washington requires floor plans of dental offices before registering equipment.

Rhode Island has the longest dental inspection form of all the states. The form is 13 pages long; however, checking lead aprons is not included on the form.

STATEMENT OF COMPLIANCE

Arizona and Connecticut issue certificates of compliance. Texas issues a Certificate of Inspection (COI) only for mammography. (Issuing certificates of compliance to all registrants would add considerable workload for the Texas program with no benefit to the program.)

PRIVATE INSPECTORS AND BUDGETS

Some states use private inspectors, for example, Maryland, Oregon, Colorado, Tennessee and Illinois. NOTE that budget information was not compared; however, the size of programs and budget available differ widely among the states. More advanced programs tend to have larger budgets or use private contractors as inspectors.

SIGNATURES

Several states require the signature of a representative of the registrant on the inspection form.

EXHIBITS

The following tables and graphs give comparisons of programs.

SURVEY OF STATE X-RAY REGULATORY PROGRAMS
50 STATES AND PUERTO RICO
INSPECTION METHODS - SUMMER 1996

GENERAL RADIOGRAPHIC INSPECTIONS

STATE	# ITEMS ASKED
TEXAS	26
FLORIDA	22
NEVADA	20
NEW YORK CITY	19
MINNESOTA	19
ARKANSAS	19
NEW MEXICO	18
IDAHO	17
ILLINOIS	17
ALABAMA	17
CALIFORNIA	16
LOUISIANA	16
MARYLAND	15
OKLAHOMA	15
VERMONT	15
MONTANA	14
NEW HAMPSHIRE	13
GEORGIA	13
NEW YORK STATE	12
MISSISSIPPI	12
MISSOURI	12
TENNESSEE	12
W VIRGINIA	12
IOWA	12
ORGEON	10
S DAKOTA	10
PUERTO RICO	8
ARIZONA	9
N DAKOTA	8
HAWAII	6
N CAROLINA	4
RHODE ISLAND	3

Entities responding	32
Total	50
% Responding	64%

**SURVEY OF 50 STATES
AND PUERTO RICO
X-RAY REGULATORY PROGRAMS**

SUMMER 1996

GENERAL RADIOGRAPHIC INSPECTION

ITEMS ASKED	% OF STATES REQUESTING
* name	52%
* model	40%
* serial	32%
* type	46%
* mobile/portable	22%
* timer accuracy/reproducibility	54%
* half value layer	50%
* linearity	38%
* collimation	48%
* labels	20%
* SID	38%
* kVp	28%
* exposure reproducibility	28%
* scatter at operator position	34%
* member of public exposure	20%
* technician credentialling	22%
* personnel monitoring	44%
* date of inspection & by whom	36%
* protective devices	46%
* entrance skin exposure	26%
* technique chart	26%
* copy of rules	10%
* notice of violation	12%
* correspondence	2%
* operating & safety procedures	20%
* NOV at exit	14%
* exit summary	16%
* postings	20%
* quality control procedures	40%
* compliance test	12%

* Includes Texas

**SURVEY OF STATE X-RAY REGULATORY PROGRAMS
OF 50 STATES AND PUERTO RICO
INSPECTION METHODS - SUMMER 1996
25 ENTITIES USING SEPARATE FORMS**

DENTAL AND VETERINARY INSPECTIONS

STATE	# ITEMS REQUESTED
TEXAS	18
NEW YORK CITY	16
NEW MEXICO	14
NEW YORK STATE	14
IDAHO	13
ARKANSAS	13
VERMONT	12
NEVADA	12
WASHINGTON	12
MINNESOTA	12
RHODE ISLAND	11
GEORGIA	11
MARYLAND	11
NEW HAMPSHIRE	10
S DAKOTA	10
MISSISSIPPI	10
W VIRGINIA	10
CALIFORNIA	9
ILLINOIS	9
MONTANA	7
OKLAHOMA	7
MISSOURI	6
HAWAII	3
MICHIGAN	3
NEW JERSEY	1

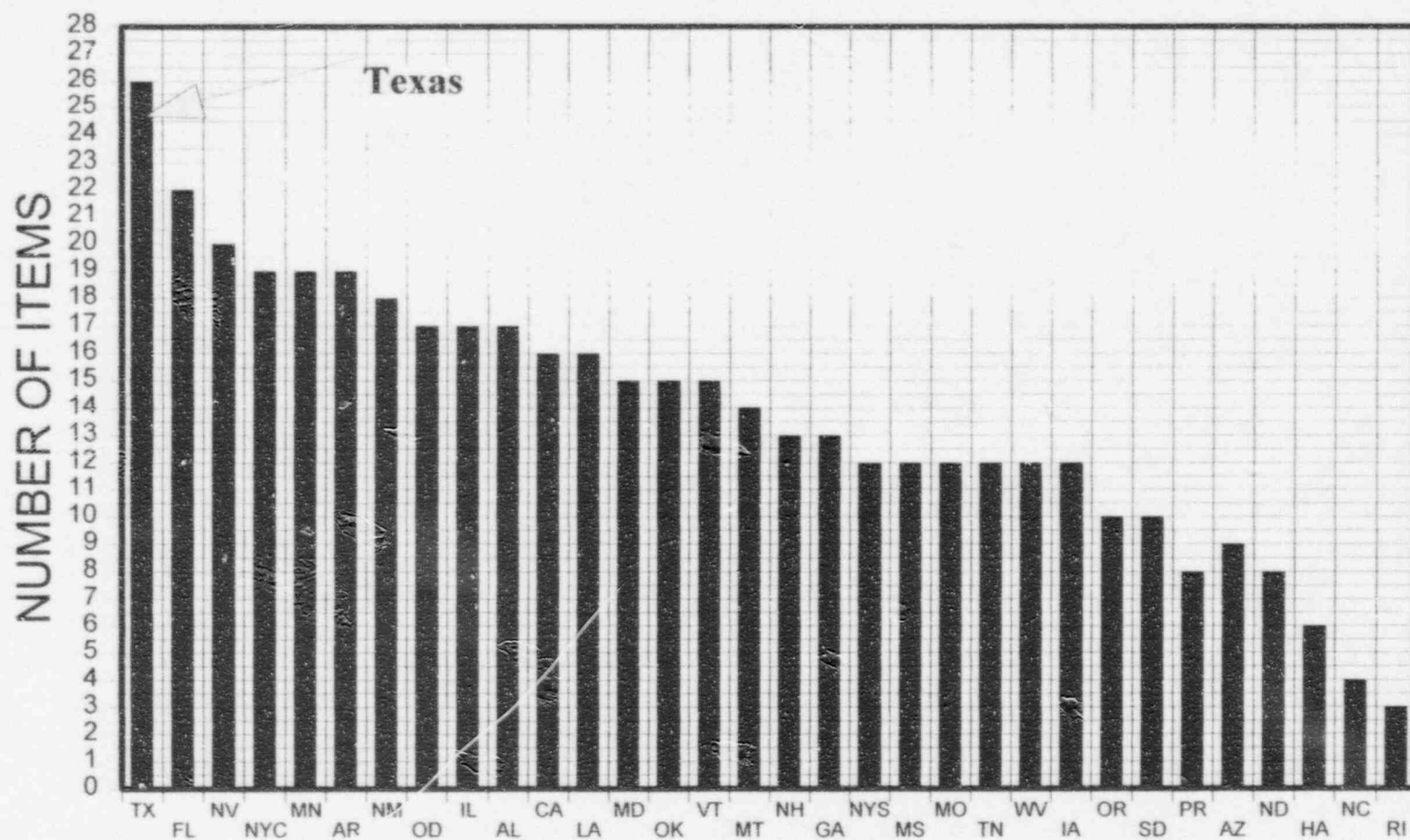
**SURVEY OF STATE X-RAY REGULATORY PROGRAMS
OF 50 STATES AND PUERTO RICO
INSPECTION METHODS - SUMMER 1996
25 ENTITIES USING SEPARATE FORMS**

DENTAL AND VETERINARY INSPECTIONS

ITEMS ASKED	% OF STATES REQUESTING
* half value layer	88%
* name	84%
* collimation	76%
* control panel	72%
* timer reproducibility	72%
* exposure reproducibility	72%
* operator safety	64%
* timer accuracy	64%
* source to image distance	56%
* ESE to limit	48%
* technicians	44%
* protective devices	44%
* exit summary	44%
ESE by kVp	32%
* operating & safety procedures	28%
NOV at exit	28%
* notice of violation	28%
kVp	28%
* labels	24%
* copy of rules	12%
* correspondence	8%

* includes Texas

NUMBER OF SIGNIFICANT ITEMS REQUESTED X-RAY INSPECTION GENERAL RADIOGRAPHIC



**SURVEY OF STATE X-RAY REGULATORY PROGRAMS
OF 50 STATES AND PUERTO RICO
INSPECTION METHODS - SUMMER 1996**

CT UNITS

STATE	MEASUREMENTS PERFORMED	QUALITY ASSURANCE CONSTANCY CHECKS (OUTPUT CHECKS)	PHANTOM USED
California	yes	yes	yes
Florida	yes, exposure reproducibility scatter at 3', 6' and operator station multiple scan average dose	yes	yes
Illinois	yes, 4 multiple scan average dose	yes	yes
New York State	mA minutes per week	yes	

RECOMMENDATIONS OF THE REVIEW TEAM

TEXAS REGISTRATION PROCESS:

- * *The number of tubes should be added to the information on the registration form.*
- * *The location of each machine and the kVp and mA should be deleted from the registration form.*
- * *Re-designing the Fee Summary enclosure could eliminate additional telephone calls and incorrect payments.*
- * *The state might consider billing based on number of tubes and charging separately for copies of the regulations.*
- * *Clarifying codes on the reverse of the Texas application form might be useful.*

TEXAS INSPECTION PROCESS:

- * *The Texas form appears to be the most concise of the ones reviewed. The condensed information on the form makes paperwork more efficient. Using blue ink similar to Illinois would provide greater readability.*
- * *Dividing facilities into categories of "small" and "large" programs might be appropriate. This would allow inspection protocols to be developed for the distinct types of programs. The Standards Branch might consider regulatory guides similar to the New York City guides.*
- * *Issuing a Notice of Violation at the completion of the inspection and having the registrant sign the notice would significantly reduce paperwork in the central office. This might be appropriate in a number of instances such as:*
 - * *when no items of noncompliance are noted*
 - * *when only paperwork violations are noted*
 - * *with violations of higher severity level only (i.e. non-health related or paperwork violations)*
 - * *with a low number of not highly critical violations*
 - * *inspections of certain categories of registrants (dentists, podiatrists, veterinarians, users of minimal threat units)*

RECOMMENDATIONS OF THE REVIEW TEAM-cont'd
TEXAS INSPECTION PROCESS:

Responses would still be required to show that the facility corrected deficiencies. If violations were inadvertently omitted, a corrected notice could be sent to the registrant advising them of the additional violation. Spot checks of inspections could be performed in the central office, rather than reviewing each inspection as is done now. However, infrequently, central office reviewers find some significant violations which inspectors did not note. For this reason, it might be important to continue second review for certain types of facilities.

Relieved of significant review responsibilities for these inspection files, staffing could be reallocated.

Timely response to registrants could be improved. Currently, the additional review by the central office extends the response time to approximately 1 month. With inspection results being sent to the central office where Notices of Violations are prepared and finalized. Registrants correspond with the central office regarding corrective actions.

Maryland and New York City have wording particularly appropriate for the on site closeout which includes a Notice of Violation which could be considered for Texas.

- * *In general, more in depth inspections are done in Texas than in most other states. Possible changes in the Texas inspection protocols could be:
 - * *reducing items checked at dental facilities*
 - * *removing requirements for quarterly audits of radiation protection programs for sole practitioner/registrant - sole operator**
- * *When unregistered machines are noted during the inspection, the registrant should sign the inspection form indicating their request to register the machine. This additional step would eliminate correspondence of a violation and an additional letter to request registration. The dental form used by Illinois provides such an inventory change on the inspection form. It is signed by the registrant and used to register equipment at the time of inspection.*

RECOMMENDATIONS OF THE REVIEW TEAM-cont'd
TEXAS INSPECTION PROCESS:

- * *Other states do not appear to review compliance testing. This causes some financial problems for Texas registrants. For instance, a one unit office, 75 miles from any other city, spent \$1005 for compliance testing (\$570 of which was for travel). Extending the interval of testing would be appropriate because the personnel monitoring records and workload do not merit testing at the frequency specified in rule. (Note that the registrant's request for exemption from the compliance testing requirement was denied by the agency.)*
- * *From the diversity of information collected at the inspection, it is apparent that inspectors need to be able to exercise professional judgement based on the findings within established parameters. Rather than just collecting data, analysis of the information on-site would be beneficial and educational to the registrant.*
- * *For those categories of information which other states do not require, selective inspection might be reasonable until rules can be changed. Currently, Texas inspections have a two tier approach which in effect selects the issues for inspection. The first tier is the information which must be gained at each inspection. The second tier is other information that may be collected when time permits or when programs need additional surveillance. Using this approach, the emphasis can be changed based on overall findings throughout the state. Merging the concept of selective inspection and the two tier approach could yield more meaningful inspections while ensuring adequate protection of public health and safety.*
- * *Using specific forms for each industrial x-ray use like Illinois might be helpful.*
- * *Podiatric units might be more closely compared with dental and veterinary units than with general radiographic units. Changes to these inspections might be appropriate.*

RECOMMENDATIONS OF THE REVIEW TEAM-cont'd
TEXAS INSPECTION PROCESS:

- * *The revised CT form submitted to the Central Office by Public Health Region 8 should be reviewed as soon as possible so that information from other states may be compared with it.*

SUMMARY TABLES

This section contains the survey form and tables summarizing the information collected.



Texas Department of Health

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Commissioner

1100 West 49th Street
Austin, Texas 78756-3189
(512) 458-7111

Radiation Control
(512) 834-6688

Carol S. Daniels
Deputy Commissioner for Programs

Roy L. Hogan
Deputy Commissioner for Administration

TO: State Radiation Control Program Directors

FROM: Richard A. Ratliff, P.E., Chief
Bureau of Radiation Control

DATE: May 20, 1996

SUBJECT: Survey of Medical and Dental X-Ray Regulatory Programs

I am requesting your assistance in providing me data on your x-ray regulatory programs to assist in the review of the current program in place in Texas. I will have all of the data compiled and put into a report which I will provide to each of you by the end of September.

Please complete the attached questionnaire and return to me as soon as you can.

Thank you for your help.

Attachment

State Radiation Control Program
Questionnaire on Medical and Dental
X-Ray Regulatory Programs

1. Do you register medical and dental x-ray machines? Yes ☐ No ☐
2. If yes, please provide a copy of the registration application.
3. If no, how do you track x-ray machines?
4. If you register medical and/or dental x-ray machines, do you issue a permit document to the facility you register? Yes ☐ No ☐
5. If you do not issue a registration permit document, what do you issue if anything?
6. Do you charge fees for x-ray registration and inspection costs? Yes ☐ No ☐
7. If so, please provide us with a copy of your fee schedule.
8. Do you inspect all medical and dental machines? Yes ☐ No ☐
9. If yes, please provide a copy of your inspection guide (report) and your inspection intervals.
10. If you do not inspect each machine, please briefly describe what you do inspect and how often?

Other comments or ideas.

Please return by July 1, 1996 to:

Richard A. Ratliff, P.E.
Texas Department of Health, Bureau of Radiation Control
1100 West 49th Street
Austin, TX 78756
512-834-6688

SURVEY OF STATE X-RAY REGULATORY PROGRAMS OF 50 STATES AND PUERTO RICO
RESPONDENTS
SUMMER 1996

	medical dental registered?	registration application provided	other way machines tracked?	issue permit document	if no document, what if anything?	fees charge	schedule of fees provided	inspect all machines?	inspection guide/report provided	inspection interval provided	if not all, what inspected?	how often?
ALABAMA	Y	Y		Y		N		Y		Y	review phy. report	
ALASKA	Y	Y		N	certificate of registration	Y	Y	Y			uses VA SOPS	no intervals
ARIZONA	Y	Y		Y		Y	Y	Y		Y		
ARKANSAS	Y	Y		Y		Y	Y	Y***	Y	Y		
CALIFORNIA	Y	Y		Y&N	yes to mammo, bill to other	Y	Y	Y	Y	Y		
COLORADO	Y	Y		N	signed application		&			Y		
CONNECTICUT	Y	Y		N	registration form stamped	Y*	Y	Y as staffing permits	per CRCPD	Y		
DELAWARE	Y	Y		Y		N		Y	N	Y		
FLORIDA	Y	Y		Y		Y	Y	Y		Y		
GEORGIA	Y	Y		Y		Y	Y	Y	Y	Y		
HAWAII	Y	Y		N	copy of reg. form	N		N	Y	Y		
IDAHO	Y	Y		Y		N		Y		Y		
ILLINOIS	Y	Y		Y	certificate of registration	Y	Y	Y w/ dept. & non-dept. inspectors	Y	Y		
INDIANA	Y	Y		Y		N		N		Y	private physicists	
IOWA	Y	Y		N	registration form - copy	Y	Y	Y	Y	Y		
KANSAS	Y	Y		N	nothing	Y	Y	Y		Y		
KENTUCKY	Y	Y		Y		Y*		N**		Y		
LOUISIANA	Y	Y		Y		Y	Y	Y	Y	Y		
MAINE	Y	Y		N	certificate of registration	Y	Y	N (uses 3rd party)		Y		
MARYLAND	Y	Y		N&Y	no DDS,DVM, yes others	Y	Y	Y% DDS,DVM by state employees	Y	Y		
MASSACHUSETTS	Y	Y		Y			Y*	Y	N	Y		
MICHIGAN	Y	Y		Y		Y	Y	Y		Y		
MINNESOTA	Y	Y		N	cancelled check	Y	Y	Y	Y	Y		
MISSISSIPPI	Y	Y		Y		Y*	Y					
MISSOURI	Y	Y		N	nothing	N		Y	Y	Y		
MONTANA	Y	Y		N	registration form - copy	N	Y	try to	Y	when can		
N CAROLINA	Y	Y								Y		
N DAKOTA	Y	Y		Y	reg. app. certified and ret'd	Y	Y	N lacks staff		N		
NEBRASKA	Y	Y		N	registration form - copy	Y	Y	supposed to, but short staffed		Y		
NEVADA	Y	Y		Y		Y*	Y	Y	Y	Y		
NEW HAMPSHIRE	Y	Y		N	certificate of registration	Y*	Y	Y	Y	Y		
NEW JERSEY	Y	N		N	invoice	Y	Y	Y				
NEW MEXICO	Y	Y		N	copy of reg. form	N		Y		Y		

SURVEY OF STATE X-RAY REGULATORY PROGRAMS OF 50 STATES AND PUERTO RICO
RESPONDENTS
SUMMER 1996

	medical/ dental registered?	registration application provided	other way machines tracked?	issue permit document	if no document, what if anything?	fees charge	schedule of fees provided	inspect all machines?	inspection guide/report provided	inspection interval provided	if not all, what inspected?	how often?
NEW YORK CITY	Y	Y		Y		*Y*	Y	% of them	Y	Y		
NEW YORK STATE	Y	Y		Y		Y	N	N - audit and sample tubes	Y	Y		
OHIO	Y	Y		Y	certificate of registration	Y	Y	Y		Y		
OKLAHOMA	Y	Y		Y		Y	Y	Y	Y	Y		
ORGEON	Y	N		Y		Y	Y	Y		Y		
PENNSYLVANIA	Y	Y		Y			Y	Y	N	Y		
PUERTO RICO	Y	N		N	certificate of registration	N		Y	Y	Y		
RHODE ISLAND	Y	N	Y	Y		Y	Y	Y however behind due to staffing	Y			
S CAROLINA	Y	Y		N	none	Y	Y	Y	Y	Y		
S DAKOTA	Y	N		Y		N		Y	Y	Y		
TENNESSEE	Y	Y		N	validated application	Y	Y	Y	Y	Y		
TEXAS	Y	Y	Y	Y		Y	Y	Y	Y	Y		
UTAH	Y	Y		Y		Y	Y	Y		Y policy		
VERMONT	Y	Y		N	no mechanism	N		Y	Y			no intervals
VIRGINIA	Y	Y		N	tube decal with unique #	Y	Y	N	N	Y	private inspectors	
W VIRGINIA	Y	Y		N		Y**		Y	Y	Y		
WASHINGTON	Y	Y		N	application/invoice	Y	Y	Y	Y			
WISCONSIN	Y	Y		Y		Y	Y	Y		Y		

*Y fee for registration only, not inspection

Y fee for registration separate from inspection fee

Y** inspection cost N** not CT, Panorex, bone densitometers, accelerators

Y***all except hospitals, 10% if consultant does

& program privatized; certification labels sold instead

Y% others by licensed inspectors

SURVEY OF STATE X-RAY REGULATORY PROGRAMS OF 50 STATES AND PUERTO RICO
REGISTRATION METHODS - SUMMER 1996

[illegible]

SURVEY OF STATE X-RAY REGULATORY PROGRAMS OF 50 STATES AND PUERTO RICO
REGISTRATION METHODS - SUMMER 1996

		SIGNIFICANT TYPES OF INFORMATION REQUESTED																										METHODS				
state	# items asked	registration type	manufacturer model	# tubes	# machines	# machines stored	kVp & mA	location	tube serial	control serial	date of purchase	from whom gotten	new or used	date manufactured	date installed	installer	date of insp & by	certification views	collimation	supplier	processor	film brand	cassette brand	service agent	workload	disposal	carbon copy	billing included	issue permit			
PERCENT OF STATES ASKING		100	100	61	65	70	37	11	37	46	30	52	7	7	2	17	20	7	7	2	2	4	2	4	2	2	2	9	17	15	52	
MINNESOTA	6	Y	Y	Y		Y			Y	Y		Y																Y	N	cancelled check		
MISSISSIPPI	10	Y	Y	Y	Y	Y	Y			Y	Y		Y	Y				Y											Y			
MISSOURI	14	Y	Y	Y	Y	Y	Y			Y		Y							Y	Y		Y	Y	Y		Y		Y	N	nothing		
MONTANA	8	Y	Y	Y	Y	Y			Y			Y	Y													Y			N	registration form - copy		
N CAROLINA	8	Y	Y	Y	Y	Y			Y	Y		Y				Y																
N DAKOTA	7	Y	Y	Y	Y	Y			Y		Y	Y																	N	cert. copy of reg. appl.		
NEBRASKA	10	Y	Y	Y	Y	Y			Y		Y				Y	Y											Y		N	registration form - copy		
NEVADA	6	Y	Y	Y	Y	Y			Y		Y																		Y			
NEW HAMPSHIRE	3	Y	Y			Y	Y																					Y	N	certificate of registration		
NEW JERSEY		Y																											N	invoice		
NEW MEXICO	8	Y	Y	Y	Y	Y			Y						Y	Y												Y	N	copy of registration form		
NEW YORK CITY	2	Y	Y			Y																							Y			
NEW YORK STATE	4	Y	Y			Y	Y																			Y			Y			
OHIO	2	Y	Y			Y																							Y	certificate of registration		
OKLAHOMA	2	Y	Y			Y																							Y			
ORGEON		Y																											Y			
PENNSYLVANIA	4	Y	Y			Y		Y									Y												Y			
PUERTO RICO		Y																											N	certificate of registration		
RHODE ISLAND		Y																											Y			
S CAROLINA	8	Y	Y	Y	Y				Y	Y	Y	Y		Y															N	none		
S DAKOTA		Y																											Y			
TENNESSEE	4	Y	Y		Y				Y	Y																			N	validated application		
TEXAS	9	Y	Y	Y	Y		Y	Y	Y	Y		Y														Y		Y				

**SURVEY OF STATE X-RAY REGULATORY PROGRAMS OF 50 STATES AND PUERTO RICO
REGISTRATION METHODS - SUMMER 1996**

		SIGNIFICANT TYPES OF INFORMATION REQUESTED																											METHODS					
state	# items asked	registration	type	manufacturer	model	# tubes	# machines	# machines stored	kVp & mA	location	tube serial	control serial	date of purchase	from whom gotten	new or used	date manufactured	date installed	installer	date of insp & by	certification	views	collimation	supplier	processor	film brand	cassette brand	service agent	workload	disposal	carbon copy	billing included	issue permit	If no document, what if anything?	
PERCENT OF STATES ASKING		100	100	61	65	70	37	11	37	46	30	52	7	7	2	17	20	7	7	2	2	4	2	4	2	2	2	2	9	17	15	52		
UTAH	6	Y	Y	Y	Y	Y				Y		Y																			Y	Y		
VERMONT	3	Y	Y			Y																								Y		N	no mechanism	
VIRGINIA	11	Y	Y	Y	Y	Y	Y		Y		Y	Y					Y		Y											Y		N	tube decals with unique #	
W VIRGINIA	2	Y	Y				Y																										N	
WASHINGTON	2	Y	Y			Y																									Y	N	reg. keeps copy of invoice	
WISCONSIN	8	Y	Y	Y	Y		Y		Y			Y					Y														Y		Y	

**SURVEY OF STATE X-RAY REGULATORY PROGRAMS OF 50 STATES AND PUERTO RICO
INSPECTION METHODS - SUMMER 1996**

GENERAL RADIOGRAPHIC INSPECTIONS

TECHNICAL MACHINE DATA														RADIATION HEALTH & SAFETY										RECORDS				FACILITY DATA		QC			OTHER
state	# items asked	name	model	serials	type	mobile/portable	timer accuracy	half value layer	linearity	cell/mesh type	isotope	STD	kvp	exposure rate/minute	scatter ratio	mbx pulse exposure	tech certificate	personnel monitoring	date taken	protective devices	entrance screen	technical notes	copy of file	notice of violation	correction	ops safety procedures	NOV exit	exit summary	postings	quality control proc	compliance test	3rd party insp	
PERCENT OF STATE REQUESTING			52%	40%	32%	46%	22%	54%	50%	38%	48%	20%	38%	28%	28%	34%	20%	22%	44%	36%	46%	26%	26%	10%	12%	2%	20%	14%	16%	20%	40%	12%	4%
ALABAMA	17	Y	Y	Y	Y	Y	Y	Y		Y		Y	Y	Y	Y			Y	Y		Y							Y					
ALASKA																																	
ARIZONA	9	Y	Y	Y	Y	Y	Y			Y						Y																	
ARKANSAS	19	Y		Y		Y	Y	Y	Y	Y	Y	Y		Y	Y	Y		Y	Y	Y		Y				Y		Y	Y				
CALIFORNIA	16	Y			Y	Y	Y	Y	Y	Y			Y					Y	Y	Y	Y		Y	Y					Y	Y			
COLORADO																																	
CONNECTICUT																																	
DELAWARE																																	
FLORIDA	22	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y		Y		Y	Y	Y	Y				Y	Y		Y	Y			
GEORGIA	13	Y			Y	Y	Y	Y			Y	Y				Y		Y	Y	Y	Y							Y					
HAWAII	6												Y		Y	Y						Y					Y			Y			
IDAHO	17	Y	Y	Y	Y		Y		Y	Y	Y	Y	Y			Y	Y	Y		Y		Y							Y	Y			
ILLINOIS	17	Y	Y	Y		Y	Y	Y	Y	Y		Y		Y				Y	Y	Y	Y			Y		Y				Y			
INDIANA																																	
IOWA	12	Y			Y		Y	Y	Y	Y			Y		Y				Y	Y		Y								Y			
KANSAS																																	
KENTUCKY																																	
LOUISIANA	16				Y		Y	Y	Y	Y				Y	Y			Y	Y	Y	Y					Y	Y	Y	Y	Y			
MAINE																																	
MARYLAND	15			Y			Y	Y	Y	Y	Y	Y		Y					Y	Y		Y					Y			Y	Y	Y	
MASSACHUSETTS																																	
MICHIGAN																																	
MINNESOTA	19	Y	Y	Y			Y	Y	Y	Y	Y	Y	Y		Y	Y		Y	Y	Y		Y				Y		Y		Y			
MISSISSIPPI	12		Y	Y	Y		Y	Y	Y	Y		Y	Y		Y			Y				Y											

GENERAL RADIOGRAPHIC INSPECTIONS

[illegible]

25 ENTITIES USING SEPARATE FORMS

DENTAL AND VETERINARY INSPECTIONS

[illegible]

SURVEY OF STATE X-RAY REGULATORY PROGRAMS OF 50 STATES AND PUERTO RICO

INSPECTION METHODS - SUMMER 1996

25 ENTITIES USING SEPARATE FORMS

DENTAL AND VETERINARY INSPECTIONS

			TECHNICAL MACHINE DATA										RADIATION HEALTH & SAFETY					RECORDS					FACILITY DATA		OTHER
state	# items asked	name	timer accuracy	timer reproducibility	exposure reproducibility	source to image dist	labels	half value layer	control panel	collimation	KVP	operator safety	protective devices	technicians	ESE to limit	ESE by kvp	copy of rules	notice of violation	correspondence	cp & safety pro	NOV at exit	exit summary	3rd party insp		
PERCENT OF STATES REQUESTING																									
		84%	64%	72%	72%	56%	24%	88%	72%	76%	28%	64%	44%	44%	48%	32%	12%	28%	8%	28%	28%	44%	8%		
KANSAS																									
KENTUCKY																									
LOUISIANA																									
MAINE																							Y		
MARYLAND	11	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y									Y		
MASSACHUSETTS																									
MICHIGAN	3	Y																			Y	Y			
MINNESOTA	12	Y	Y	Y	Y		Y	Y		Y	Y		Y	Y						Y		Y			
MISSISSIPPI	10			Y	Y	Y		Y	Y	Y	Y	Y		Y								Y	Y		
MISSOURI	6			Y	Y			Y	Y	Y		Y													
MONTANA	7	Y	Y	Y				Y	Y					Y	Y										
N CAROLINA																									
N DAKOTA																									
NEBRASKA																									
NEVADA	12	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y			Y									

SURVEY OF STATE X-RAY REGULATORY PROGRAMS OF 50 STATES AND PUERTO RICO

INSPECTION METHODS - SUMMER 1996

25 ENTITIES USING SEPARATE FORMS

DENTAL AND VETERINARY INSPECTIONS

			TECHNICAL MACHINE DATA									RADIATION HEALTH & SAFETY					RECORDS					FACILITY DATA		OTHER
state	# items asked	name	timer accuracy	timer reproducibility	exposure reproducibility	source to image dist	labelis	half value layer	control panel	collimation	KVP	operator safety	protective devices	technicians	ESE to limit	ESE by kVp	copy of rules	notice of violation	correspondence	op & safety pro	NOV at exit	exit summary	3rd party insp	
PERCENT OF STATES REQUESTING																								
			84%	64%	72%	72%	56%	24%	88%	72%	76%	28%	64%	44%	44%	48%	32%	12%	28%	8%	28%	28%	44%	8%
NEW HAMPSHIRE	10	Y		Y	Y	Y		Y	Y	Y					Y	Y		Y						
NEW JERSEY	1	Y																						
NEW MEXICO	14	Y	Y	Y	Y			Y	Y			Y	Y	Y	Y	Y		Y			Y	Y		
NEW YORK CITY	16		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y		Y			Y	Y		
NEW YORK STATE	14	Y	Y	Y	Y	Y		Y	Y	Y		Y			Y	Y		Y		Y		Y		
OHIO																								
OKLAHOMA	7	Y		Y				Y		Y					Y					Y	Y			
ORGEON																								
PENNSYLVANIA																								
PUERTO RICO																								
RHODE ISLAND	11	Y	Y	Y	Y			Y	Y	Y		Y		Y			Y			Y				
S CAROLINA																								
S DAKOTA	10	Y	Y	Y		Y		Y	Y	Y		Y	Y		Y									
TENNESSEE																								
TEXAS	18	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y		Y		

DENTAL AND VETERINARY INSPECTIONS

[illegible]