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Workgroup for Electronic Data Interchange (WEDI)  
National Provider Identifier Outreach Initiative (NPIOI)

NPI Implementation Workgroup

# National Provider Identifier Issue Papers



## NPPES Dissemination:

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The NPI Registry and the  
NPPES Downloadable File

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*Initial Industry Experiences  
and Recommendations*

*Public Report - December, 2007*

**Workgroup for Electronic Data Interchange**

12020 Sunrise Valley Dr., Suite 100, Reston, VA 20191

(t) 703-391-2716 / (f) 703-391-2759

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# The NPI Registry and NPPES Downloadable File: *Initial Industry Experiences and Recommendations*

## Executive Summary of Recommendations

### I. NPI Registry (NPI Query-Only System)

#### A. System Access and Navigation

1. Recommendation: CMS should continue to consider and implement mechanisms to ensure that the NPI Registry will become a reliable and dependable operation. Redundant systems, alternative sites, and other measures should be considered.
2. Recommendation: The NPPES homepage should more clearly note that the NPI Registry is NOT the place to apply for an NPI or update an NPI record
3. Recommendation: CMS should make more explicit statements and instructions about editing/updating pages, instruct people to go to the Certification Statement page to complete that page and submit, and warn people that unless they do so, the changes being made will not be taken by the system and will not be accessible by NPPES data users

#### B. Query Approach

4. Recommendation: Basic but complete search documentation should be provided, to describe query features of the NPI Registry
5. Recommendation: Basic instructions/examples for how to refine and improve the searches to achieve the best possible matches should be provided
6. Recommendation: Expand the number of returned hits to 300.
7. Recommendation: CMS should correct NPI Registry system so that it does not do automatic wild-card searches on certain fields. Let user decide when user wants to include a wild-card.
8. Recommendation: CMS should expand the Type 1 search elements to include the following:

- Middle Name
- Other identifiers, including UPIN Number and State License Number
- Taxonomy codes

9. Recommendation: CMS establishes a process and a deadline for informing provider organization contacts and individual providers of the need to go into their organization NPI record and verify if the number they entered as EIN is their SSN. Deadline should be consistent with the deadline provided prior to the initial availability of the NPI Registry, to allow individual providers to go into their NPI records and evaluate their 'Other Identifier' information.

WEDI will work with CMS to inform the industry of this process and deadline, and encourage individual providers and provider organizations to correct any SSNs erroneously entered into the EIN field of a Type 2 application

Upon reaching the deadline, CMS should make the EIN field available 1) as a query field on the NPI Registry; 2) as a returned item on the NPI Registry; and 3) as a field on the NPPES Downloadable File.

CMS should also make a stronger WARNING note more prominently shown in the Type 2 application's screen where the EIN is to be entered, advising providers NOT TO ENTER a social security number on this field.

10. Recommendation: Every organization should search back on the NPI Registry their own NPIs. Whenever identifying an NPI that should not have been created, organizations should 1) contact the individual that created it (via the contact person available from the record); 2) request that the wrongly-created NPI record be deactivated; and 3) if the individual that mistakenly applied for a Type 2 NPI actually needs a Type 1 NPI, the individual shall be informed that he/she needs to apply for one.

CMS should work with the industry to help identify and address these situations.

11. Recommendation: Regarding specifics of the remedy when a practitioner has obtained a Type 2 NPI instead of a Type 1 NPI, CMS should re-examine the process for individual practitioners to correct this error. Current guidance from CMS is that the

practitioner must apply for a Type 1 NPI (this is possible online) and also submit a request on paper to deactivate the original NPI.

The process CMS has prescribed is very burdensome, not just to the practitioners but also to payers and other health care providers who have already used the Type 2 NPIs in constructing crosswalks to legacy IDs.

CMS should consider an alternative approach that would allow retention of the already-issued NPI number and change of the entity type from Type 2 to Type 1, after practitioners or their employer on their behalf has provided the additional data necessary to complete a Type 1 application.

CMS should work with concerned industry stakeholders to address this situation.

12. Recommendation: To prevent such problems in the future, CMS should strongly consider:
  - More clearly separating the Type 2 from the Type 1 application (for example, by establishing separate websites)
  - And/or adding error-detection logic that would, for example, detect a mismatch between a Type 2 entity and a Taxonomy Code choice that indicates an individual practitioner
  - And/or adding a question early on in the application to this effect: "You are applying for a Type 2 or organizational entity NPI. If you are an individual practitioner you should apply for a Type 1 NPI. Is Type 2 the choice you wish to make?"
13. Recommendation: An informational note should be added to the Type 2 search screen about the importance of using the wild-card when typing a name of an organization, to see all possible matches.
14. Recommendation: An informational note should be added to the Type 2 search screen about the importance of using the wild-card when typing a name of an organization, to see all possible matches.
15. Recommendation: Expand search elements to include the following:
  - DBA
  - Other provider identifiers (including Medicare, License Number, NCPDP)

- Taxonomy code
- EIN (once the EIN is made available)

### **C. Information Provided**

16. Recommendation: The NPI Registry should present in the initial Provider Search Results screen BOTH the Taxonomy Code Hierarchical Level Provider Type AND the full and actual taxonomy code. This applies to both the individual (Type 1) and organization (Type 2) search capabilities
17. Recommendation: The NPI Registry should present in the initial Provider Search Results screen for organization providers screen the DBA of the organization and the Subpart marker (see Section E – Special Issues below)

### **D. System Maintenance**

18. Recommendation: It is imperative that CMS work with its contractors to schedule any maintenance of the NPI Registry system during off-hours and at times when the NPI Registry system is at its lowest usage level.
19. Recommendation: CMS should continue their efforts to communicate in advance when a scheduled maintenance on the system will take place. In addition, CMS should post a message to the NPPES website when the Registry is down with additional information beyond the current simple message “NPI Registry Not Available at this Time”. A date with the note will be most helpful, with a projected downtime, as its done in other industries (such as banking).

### **E. Special Issues**

20. Recommendation: CMS should correct spelling of certain data elements that can reliable be corrected – for example spelling of a city using the zip-code and US Post Office files.
21. Recommendation: CMS should make available to industry participants appropriate aspects of the basic logic used by NPPES to avoid issuing duplicate NPIs. WEDI will collaborate with CMS to address this issue.
22. Recommendation: CMS should clarify if these elements are part of the Freedom of Information Act (FOIA) disclosable elements. If they are not at this point, CMS should consider pursuing

classification of these elements as FOIA-disclosable and make them available via the NPI Registry as well as the NPPES Downloadable File.

## **II. NPI Downloadable File**

### **A. File Availability**

23. Recommendation: CMS should designate a specific day of the month to make new monthly files available and that this be posted on the NPPES Downloadable File website
24. Recommendation: CMS should make the monthly NPPES Downloadable File available in two parts, one with all Type 1 providers and another one with all Type 2 providers

### **B. File Format**

25. Recommendation: CMS should consider providing the file in an alternative method from CSV, such as tab-separated fields. No commas or quotes on values. In an experimental conversion, the tab-separated format reduced the size from 1.7 gigabytes to less than 1.0 gigabytes. It also eliminated the double-quote errors generated by the CSV format. (*Note: tab characters contained in the NPPES database should be disallowed or replaced prior to generating a tab-separated file*)
26. Recommendation: CMS should make new attempts to correct/clean-up file from formatting errors, handling of the null variable, ensure all records contain consistently 187 fields, and have the file tested externally for a few sources to ensure reliability and consistency in the import/upload process.
27. Recommendation: CMS should considered using a UNICODE encoding, as this seems to be the standard approach used in the computing industry today and into the future. This does, however, introduce some additional complexities and size-file challenges that need to be taken into account.
28. Recommendation: CMS should provide basic audit-type documentation to go along with each file released, including total record counts that will allow users to validate, verify and confirm appropriate load of file, records and fields.
29. Recommendation: After a few months worth of data management experience with the NPPES Downloadable file, CMS should

consider 'harmonizing' the order in which the most common 'other identifiers' appear in the file.

30. Recommendation: CMS should expand the number of "Other Identifiers" fields to support a much larger number, potentially making it unlimited. Controlling the size of the NPI Downloadable file, based on the actual number of "Other Identifiers" fields completed or entered per record can be handled technically through other means.

### **III. NPI Data Quality**

31. Recommendation: CMS should periodically reinforce the message to providers of the need to comply with federal regulations and update any required data element on their NPI records upon a change.

WEDI will continue to work with CMS in communicating and reaching out providers to achieve compliance with this requirement

32. Recommendation: CMS should consider incorporating data integrity checks into the NPPES data application process; similarly, data integrity checks should be performed on the data prior to release
33. Recommendation: Industry participants should immediately communicate to providers they do business with about any inconsistencies or errors they find on the information about that provider contained in the NPPES data. For example, if there are errors with the UPIN entered, the provider will need to update the record and the industry will need to wait until the next NPPES Downloadable File replacement becomes available.
34. Recommendation: CMS should use, when applicable, national and international standards (such as ISO) for coding and defining values on the file. Standards should also be used in creating data quality and integrity checks of the data and the file being created for download access.

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# The NPI Registry and NPPES Downloadable File: *Initial Industry Experiences and Recommendations*

## I. Introduction

The purpose of this paper is to summarize the initial experiences, comments, reactions and recommendations from the industry on two national NPPES Dissemination methods utilized by the Centers for Medicare and Medicaid Services (CMS): The NPI Registry and the NPPES Downloadable File.

Background information regarding these two systems is available from the CMS NPI website at <http://www.cms.hhs.gov/nationalprovidentstand/>.

## II. NPI Registry (NPI Query-Only System)

Industry experiences, issues and recommendations related to the NPI Registry can be organized into five areas:

- System Access and Navigation
- Query Approach
- Information Provided
- System Maintenance
- Special Issues

The following sections describe the main findings and recommendations regarding these five areas.

### A. System Access and Navigation

Generally, the industry has responded in an overwhelming manner to the availability of the NPI Registry. The expectation that the NPI Registry would be a web-based, free access service, where single NPI queries of health care providers can be requested, was met with a fast, expanding response on use and demand by the industry. The service has quickly become (or is quickly becoming) a mission-critical business component for many organizations. For example, Pharmacies conducting real-time transactions when filling a prescription (while a patient/customer is waiting) need to rely on the NPI Registry being available and operating 24/7, so that the prescriber's NPI can be searched, obtained and reported in the transaction.

For this reason, dependability and reliability on the service are paramount.

Recommendation: CMS should continue to consider and implement mechanisms to ensure that the NPI Registry will become a reliable and dependable operation. Redundant systems, alternative sites, and other measures should be considered.

There is still some confusion from the website about the NPI Registry as a 'source' of information, and the NPPES Enumeration System (the separate web-based process to obtain or update provider information).

Recommendation: The NPPES homepage should more clearly note that the NPI Registry is NOT the place to apply for an NPI or update an NPI record

With respect to the navigational screens, one of the items noted by users is that the 'back' feature of the browser is disabled (does not return to previous screen) and users are forced to depend on the 'back' option inside the NPI Registry screens, placed at the bottom of each screen and sometimes not self-evident (particularly when screen is long).

It is also important to note that during the editing of an NPI records, in addition to clicking the SAVE button on the screen being edited/updated, the person doing the editing/updating of the record MUST go to the Certification Statement screen and complete that screen again (check the box at the top of the screen and click the SUBMIT button). Otherwise, the updates will not be taken by the NPPES system, the provider/person doing the edits will assume they are, and people accessing the NPPES data afterward will NOT see the updates.

Recommendation: CMS should make more explicit statements and instructions about editing/updating pages, instruct people to go to the Certification Statement page to complete that page and submit, and warn people that unless they do so, the changes being made will not be taken by the system and will not accessible by NPPES data users

## **B. Query Approach**

The NPI Registry query approach offers users the ability to enter one or more variables and return all possible matches (exact and close matches in many cases).

### **1. General Issues (Applicable to Type 1 and Type 2)**

Instructions for Query approaches: There are some basic concepts applicable to the query system that are not explained or described. For example, the use of wild-cards (\*) in searches, inside each of the search elements.

Recommendation: Basic but complete search documentation should be provided, to describe query features of the NPI Registry

Recommendation: Basic instructions/examples for how to refine and improve the searches to achieve the best possible matches should be provided

Number of 'Hits' returned limited to 150: The number of 'Hits' or matches returned by the system is limited to 150. This may not be realistic when searching very common names in large cities.

Recommendation: Expand the number of returned hits to 300.

Wild-Card Search Set Automatically on Certain Fields: When doing searches utilizing certain fields, such as 'Name', the system automatically returns all matches that contain the string of characters entered (automatic wild-card). For example, when searching with the name 'WALT' (without adding the wild-card at the end), the system returns all matches including 'WALTER', even though the search did not include the wild-card at the end (i.e., did not entered 'WALT\*'). While this automatic wild-card feature could be a desirable feature, it should NOT be automatically assumed and should be turned off.

Recommendation: CMS should correct NPI Registry system so that it does not do automatic wild-card searches on certain fields. Let user decide when user wants to include a wild-card.

## **2. Type 1 – Individual Health Care Providers**

For Type 1, the system utilizes the following search elements:

- NPI
- Provider First Name
- Provider Last Name
- Practice Address City
- Practice Address State
- Practice Address Zip

For the most part, Type 1 searches seem to be working appropriately, although there are a number of issues reported and recommendations for improvement.

Expanding search system to include other key elements: Generally, the larger the number of search elements, the better chances there are to reach a unique match. For example, adding Middle Name could help distinguish uniquely a provider.

In addition, a highly reliable way to achieve a match is to utilize one or more of the other identifiers commonly reported by providers. For example, UPIN, state license number, and others. Even when taking into account that not all providers have reported the UPIN or state license number, and that not all are reported on the same Other Identifier location (of the up-to-15 available).

Recommendation: CMS should expand the Type 1 search elements to include the following:

- Middle Name
- Other identifiers, including UPIN Number and State License Number
- Taxonomy codes

## **3. Type 2 – Health Care Provider Organizations**

For Type 2, the system utilizes the following search elements:

- NPI
- Organization Name
- Practice Address City
- Practice Address State
- Practice Address Zip

Type 2 searches have resulted in a larger number of issues and concerns reported by the industry. They include:

Lack of availability of EIN: The EIN of organizations is one of the most reliable factors in achieving an NPI search match. CMS has explained that the reason for temporarily not allowing this element to be released is that individual providers have entered erroneously their Social Security Number on this field. This seems to have happened more commonly in sole-proprietorship situations (providers erroneously applied for a Type 2 NPI for their 'company', even though the entity was under a sole-proprietorship, thus NOT eligible to obtain an NPI – yet, the NPPES system was not able to distinguish this situation, since SSNs and EINs are both 9-digit identifiers).

The extent to which this has happened is not clearly known. Still, given the significant value of EIN, not just for querying providers but for creating cross-links between providers components within the same corporate entity (presumably all sharing the same NPI), it is critical to find a timely solution for this situation.

Recommendation: CMS establishes a process and a deadline for informing provider organization contacts and individual providers of the need to go into their organization NPI record and verify if the number they entered as EIN is their SSN. Deadline should be consistent with the deadline provided prior to the initial availability of the NPI Registry, to allow individual providers to go into their NPI records and evaluate their 'Other Identifier' information.

WEDI will work with CMS to inform the industry of this process and deadline, and encourage individual providers and provider organizations to correct any SSNs erroneously entered into the EIN field of a Type 2 application

Upon reaching the deadline, CMS should make the EIN field available 1) as a query field on the NPI Registry; 2) as a returned item on the NPI Registry; and 3) as a field on the NPPES Downloadable File.

CMS should also make a stronger WARNING note more prominently shown in the Type 2 application's screen where the EIN is to be entered, advising providers NOT TO ENTER a social security number on this field.

More NPIs than Originally Obtained: Several organizations have reported that when they searched on the NPI Registry their own NPIs, they find there are MORE than the ones they originally applied for. In many cases, this has occurred when individuals mistakenly apply for their NPIs as a type 2 (rather than a Type 1) and enter the name of the organization and possibly the organization's EIN (if they know it) or even their own SSN, creating a new, separate NPI for the organization.

Recommendation: Every organization should search back on the NPI Registry their own NPIs. Whenever identifying an NPI that should not have been created, organizations should 1) contact the individual that created it (via the contact

person available from the record); 2) request that the wrongly-created NPI record be deactivated; and 3) if the individual that mistakenly applied for a Type 2 NPI actually needs a Type 1 NPI, the individual shall be informed that he/she needs to apply for one.

CMS should work with the industry to help identify and address these situations.

Recommendation: Regarding specifics of the remedy when a practitioner has obtained a Type 2 NPI instead of a Type 1 NPI, CMS should re-examine the process for individual practitioners to correct this error. Current guidance from CMS is that the practitioner must apply for a Type 1 NPI (this is possible online) and also submit a request on paper to deactivate the original NPI.

The process CMS has prescribed is very burdensome, not just to the practitioners but also to payers and other health care providers who have already used the Type 2 NPIs in constructing crosswalks to legacy IDs.

CMS should consider an alternative approach that would allow retention of the already-issued NPI number and change of the entity type from Type 2 to Type 1, after practitioners or their employer on their behalf has provided the additional data necessary to complete a Type 1 application.

CMS should work with concerned industry stakeholders to address this situation.

Recommendation: To prevent such problems in the future, CMS should strongly consider:

- More clearly separating the Type 2 from the Type 1 application (for example, by establishing separate websites)
- And/or adding error-detection logic that would, for example, detect a mismatch between a Type 2 entity and a Taxonomy Code choice that indicates an individual practitioner
- And/or adding a question early on in the application to this effect: "You are applying for a Type 2 or organizational entity NPI. If you are an individual practitioner you should apply for a Type 1 NPI. Is Type 2 the choice you wish to make?"

Typing Full and Exact Organization Name on Search Screen: When searching for organization NPIs by name, the user must enter the FULL AND EXACT name of the organization on the search screen, or use a wild card. While this may be the correct configuration, it is not intuitive and would benefit from a clarification note on the screen. For example, when entering the name 'Allina' on the organization name search screen, the NPI Registry reports no match. The FULL AND EXACT name of the organization is Allina Health System. There are over 100 NPI records for Allina Health System. In order to reach them, the user must enter 'Allina\*' (with a wild-card at the end) on the organization name. Again, this might not be intuitively understood by user. Similarly,

when entering 'Cleveland Clinic' as organization name, the NPI Registry reports 4 matches. But when entering 'Cleveland Clinic\*' (with a wild-card at the end), the NPI Registry reports 45 matches, most of which would have not been seen by the user when not using the wild-card.

Recommendation: An informational note should be added to the Type 2 search screen about the importance of using the wild-card when typing a name of an organization, to see all possible matches.

Expanding Search Capabilities: As with the Type 1 search approach, Type 2 searches will benefit from expanding the search elements to include others such as DBA names (not just legal name), other provider identifiers, taxonomy codes and, in the future, the EIN. With respect to the DBA, in many cases the legal name of the organization is not the most commonly known name in the industry, or there are other organization components that share the same legal business name.

Recommendation: Expand search elements to include the following:

- DBA
- Other provider identifiers (including Medicare, License Number, NCPDP)
- Taxonomy code
- EIN (once the EIN is made available)

### C. Information Provided

Once a search is completed, the NPI Registry returns a screen with selected data elements for all matches, including:

Type 1 – Individual	Type 2 – Organization
<ul style="list-style-type: none"> <li>■ NPI</li> <li>■ Last Name</li> <li>■ First Name</li> <li>■ Street</li> <li>■ City</li> <li>■ State</li> <li>■ Zip</li> <li>■ Primary Taxonomy</li> <li>■ 'Detail' hyperlink column</li> </ul>	<ul style="list-style-type: none"> <li>■ NPI</li> <li>■ Organization Name</li> <li>■ Street</li> <li>■ City</li> <li>■ State</li> <li>■ Zip</li> <li>■ Primary Taxonomy</li> <li>■ 'Detail' hyperlink column</li> </ul>

### Issues and Recommendations on Provider Search Results screen

With respect to this Provider Search Results screen, two specific comments and recommendations are:

Primary Taxonomy Code Presented: On this Provider Search Results screen, the primary provider taxonomy code shown is the Hierarchical Level “Provider Type” from the national Provider Taxonomy Codeset. The full and actual primary taxonomy code will be more helpful in deciding which of all the possible matches the correct one is.

Recommendation: The NPI Registry should present in the initial Provider Search Results screen BOTH the Taxonomy Code Hierarchical Level Provider Type AND the full and actual taxonomy code. This applies to both the individual (Type 1) and organization (Type 2) search capabilities

Other Elements to Present: For Type 2 searches, it will be very valuable to include in the Provider Search Results screen other key distinguishing elements such as DBA and the Subpart marker.

Recommendation: The NPI Registry should present in the initial Provider Search Results screen for organization providers screen the DBA of the organization and the Subpart marker (see Section E – Special Issues below)

## **General Issues and Recommendations on Information Provided**

New Elements from Revised NPI Application Not Available: Some of the newer elements added to the NPI application form since July, 2007, are not yet available. They include new information on sole-proprietors and subparts, such as ‘parent’ organization name and TaxID. See Section E – Special Issues below.

### **D. System Maintenance**

It is becoming more and more clear that the NPI Registry WILL BE a very critical tool in fulfilling business process needs that will directly have an effect on access to services and quality of care for patients, consumers and enrollees.

As noted above, for many organizations the NPI Registry is becoming a mission-critical resource.

Understanding the need to perform maintenance service on the system from time to time, it is imperative that such maintenance be scheduled at times and during periods when the use of the service will be at the lowest. Overnight maintenance would be ideal, as even during weekend and holiday hours, when other activities might slow down, certain health care functions will continue to occur or even occur more often (such as pharmacy transactions).

Recommendation: It is imperative that CMS work with its contractors to schedule any maintenance of the NPI Registry system during off-hours and at times when the NPI Registry system is at its lowest usage level.

Recommendation: CMS should continue their efforts to communicate in advance when a scheduled maintenance on the system will take place. In addition, CMS should post a message to the NPPES website when the Registry is down with additional information beyond the current simple message “NPI Registry Not Available at this Time”. A date with the note will be most helpful, with a projected downtime, as its done in other industries (such as banking).

## **E. Special Issues**

Availability of EIN: See Section II.B.3 above.

Correcting spelling of certain fields: When applying for an NPI, providers might not enter correctly the spelling of certain field that can be auto-corrected and that are critical in the search utility. For example, the spelling of the city. Case in point - when searching “Nimi Singh, MD” in “Minneapolis”, this person will not come up because the spelling of city on the record was incorrect (“Mineapolis”).

Recommendation: CMS should correct spelling of certain data elements that can reliable be corrected – for example spelling of a city using the zip-code and US Post Office files.

Maintaining the Availability of the UPIN Registry: We applaud the decision by CMS to continue to support the availability of the UPIN Registry through May 23, 2008. As it has been commented in previous communications to CMS and testimony to NCVHS, the continued support and availability of the UPIN Registry during the contingency period is a critical element in achieving a successful transition to the NPI while avoiding major disruptions in transaction processing and business operations during the contingency period.

Access to basic NPPES Gatekeeper Logic to Avoid Duplicates: Understanding the challenges and risks associated with making the full system logic for avoiding issuing duplicate NPIs to individuals, several organizations have commented on the benefit to have at least some basic understanding of such logic, so that this can be included in the organizations’ own crosswalk systems.

Recommendation: CMS should make available to industry participants appropriate aspects of the basic logic used by NPPES to avoid issuing duplicate NPIs. WEDI will collaborate with CMS to address this issue.

Availability and Use of Newer Data Elements Being Collected by NPPES: As noted above, several of the newer data elements that were added to the NPI application form in July, 2007, were not included in the list of FOIA-disclosable elements, although they

seem to be appropriate for such classification and they are in many respects critical to the NPI Registry process (including search, selection of matches and actual delivery of these data elements in the detail information screen for any particular provider).

Specifically, the 'marker' on the record for sole-proprietor, for subpart, the legal name of the parent organization and the EIN of the parent organization.

Recommendation: CMS should clarify if these elements are part of the FOIA-disclosable element. If they are not at this point, CMS should consider pursuing classification of these elements as FOIA-disclosable and make them available via the NPI Registry as well as the NPPES Downloadable File.

### III. NPI Downloadable File

Industry experiences, issues and recommendations related to the NPPES Downloadable File system can be organized into two main areas:

- File Availability
- File Format

An initial discussion on Data Quality issues (applicable to both NPI Registry and NPPES Downloadable File) is presented in the next section of this report.

#### A. File Availability

Generally, the mechanism chosen by CMS to make the NPPES Downloadable File available (separate dedicated website/URL with a simple link to download file) has been well received by the industry.

Future Monthly File Availability: Considering that CMS will be making available a monthly replacement file, and to avoid the uncertainty of when (which day of the month) the file will become available, it will be recommended for CMS to select a consistent and specific day in the month for these to make new files available. For example, the first Monday of the month.

Recommendation: CMS should designate a specific day of the month to make new monthly files available and that this is posted on the NPPES Downloadable File website

Making File Subsets Available: Given the size of the single file and considering that there are small- and medium-size organizations that will still need to download and utilize the file, but will not have the capability to handle it in its current configuration, it has been suggested that the file be broken into smaller files. The most common suggestion has been to split the file into two, one to include all Type 1 records and another one to include all Type 2 records.

Microsoft Access, one of the most commonly used database applications in small- and even medium-size organizations, has a size limitation of handling files that are less than 2 gigabytes.

Recommendation: CMS should make the monthly NPPES Downloadable File available in two parts, one with all Type 1 providers and another one with all Type 2 providers

## B. File Format

A table showing the complete field distribution and basic field characteristics is provided in Appendix 1. A set of selected field distribution statistics is provided in Appendix 2.

File format issues identified by industry participants include:

Use of the CSV file format: While the Comma-Separated Values (CSV) format is a common type of format for distribution of large-scale tabular databases, there are important intrinsic characteristics of the NPPES file that are creating problems with the importing and uploading of the file into database programs.

Specifically, the file utilizes double quotes for text inside the comma-delimited fields. In several cases, the individuals entering the records have entered text with quotes in them, which has created data import and parsing errors.

Additionally, several records have been noted to end prematurely.

Recommendation: CMS should consider providing the file in an alternative method from CSV, such as tab-separated fields. No commas or quotes on values. In an experimental conversion, the tab-separated format reduced the size from 1.7 gigabytes to less than 1.0 gigabytes. It also eliminated the double-quote errors generated by the CSV format. (*Note: tab characters contained in the NPPES database should be disallowed or replaced prior to generating a tab-separated file*)

Errors reported on file: Several 'errors' in the format and content structure have been reported in the industry. They can be grouped into:

- Records (rows) were malformed per the CSV format standard
- Records contained more or less than the indicated 187 fields
- Records contained the token "null" where they should simply contain "" (a single set of double quotes) - at least 119 records contained such error
- Records contained characters outside the 7-bit ASCII range (i.e. char codes 128-255) – a total of 1131 records had such situation
- Records contained at least one tab character (6 such records)
- Records contained unusual (though legal) punctuation characters such as { ~ ] [ < > ) (

One such experience noted that they had a total of 681 records with loading errors. Several related to delimiters, the use of the word null in some fields (<unavail>), and others.

Another area where errors were reported was the two groups of repeating fields (Other Provider Identifier and Taxonomy Codes). Because of the very low reporting of two or more of these data elements in each record, all 'empty' fields are recorded as NULL.

The issue with the records with characters outside of 7-bit ASCII seems to be the classic data encoding issue. The characters themselves appear to fall into two categories: fancy punctuation (em-dash, curly quotes) and diacritical marks in names. Historically these have been represented using a variety of incompatible encoding schemes.

It seems the scheme was/is windows-1252 (<http://en.wikipedia.org/wiki/Windows-1252>)

The question is whether there were ground rules established for the characters encoded in range 128-255.

Recommendation: CMS should make new attempts to correct/clean-up file from formatting errors, handling of the null variable, ensure all records contain consistently 187 fields, and have the file tested externally for a few sources to ensure reliability and consistency in the import/upload process.

Recommendation: CMS should considered using a UNICODE encoding, as this seems to be the standard approach used in the computing industry today and into the future. This does, however, introduce some additional complexities and size-file challenges that need to be taken into account.

Lack of File Validation Documentation: While CMS has provided significant generic file formatting and field information and documentation, the first file made available to the industry did not contained or was accompanied with a reference validation file describing some basic parameters that will allow users to confirm, validate and verify that in the import/uploading process records where not missed or data fields were not misread. For example, providing the total number of records contained on the file, first and last NPI on the file, number of replacement NPIs, and some internal randomly selected field values to test against the imported file.

Recommendation: CMS should provide basic audit-type documentation to go along with each file released, including total record counts that will allow users to validate, verify and confirm appropriate load of file, records and fields.

Organizing and expanding “Other Identifiers” fields. In completing their NPI applications, providers (both Type 1 and Type 2) entered one or more identifiers in the “other identifiers” fields in no particular order. For example, one provider put their UPIN number as his/her first “other identifier” and state license number as the second “other identifier”, while another provider entered them in the reverse order.

Recommendation: After a few months worth of data management experience with the NPPES Downloadable file, CMS should consider ‘harmonizing’ the order in which the most common ‘other identifiers’ appear in the file.

In addition, the maximum number of fields available for “Other Identifiers” (fifteen), while not fully utilized up to this point, is not sufficient to carry all possible other identifiers that

providers can, and in some cases will need to enter for payers (including Medicare) to use in their crosswalks and avoid having to reject transactions because of no match on file.

Recommendation: CMS should expand the number of “Other Identifiers” fields to support a much larger number, potentially making it unlimited. Controlling the size of the NPI Downloadable file, based on the actual number of “Other Identifiers” fields completed or entered per record can be handled technically through other means.

It is important to consider that the original intent of the “Other Identifiers” fields was to facilitate the creation of highly reliable crosswalks by trading partners, and that providers may need to enter the legacy identifiers of each of the payers they do business with, in order for those payers to make reliable matches.

## IV. NPI Data Quality

This report does not include a comprehensive evaluation of the intrinsic quality of the data contained in the NPPES system (and available via both the NPI Registry and the NPI Downloadable File).

Still, preliminary data from the industry shows that incorrect information exist in the NPPES file due to data inadvertently entered incorrectly by the providers. It has also been reported that data is not being updated appropriately and in a timely fashion, as it is required by federal regulations. Such inconsistencies exist in two main areas:

- Practice address not changed after a move
- Data keyed incorrectly (such as misspellings of names, city; mistyping of provider identifiers, and others)

Recommendation: CMS should periodically reinforce the message to providers of the need to comply with federal regulations and update any required data element on their NPI records upon a change.

WEDI will continue to work with CMS in communicating and reaching out providers to achieve compliance with this requirement

An initial set of data quality concerns has been able to be gathered from industry input. Some of these issues were found when comparing data between the NPPES Downloadable File, the NPI Registry and data maintained by organizations. These data quality issues include:

- Multiple NPIs for Type 1 providers – there are some reports of individual providers having obtained more than one Type 1 NPI. This may occur when a paper application was submitted without a SSN and a web application was also entered (with SSN) and NPPES did not identify the duplicate
- Type 2 NPIs issued to individuals that are sole-proprietors
- More Type 2 NPIs issued to an organization than the number of NPIs the organization knows about and originally applied for
- UPIN Mismatches: 176 records showed errors because the same UPIN had 2 different NPIs
  - 4 records showed UPIN, Last Name match but first name differed
  - 2 records showed name differed due to hyphenated name
  - 94 records showed names identical, UPIN matched but still 2 separate, different NPIs

- UPIN belong to one provider and not the other (still working on determining totals for this – but UPIN Registry will be critical in addressing any mismatches)
- Unmatched NPI reported by a provider on a transaction from NPI contained in NPPES data – while this may be properly explained on cases of Type 2 providers, it may be difficult to justify (and probably not possible) with Type 1 providers
  - One example is a provider reporting the NPI of ‘1003861568’ on a claim but according to the NPPES data, the provider’s NPI is ‘1548225386’
  - Another example is an entity who reported their NPI as ‘1215122577’ but the NPPES sequential enumeration skips from 1215121892 to 1215127006
- There was an issue that seemed to affect only one record in the file: # 4,889. This record does not have the leading double quote mark ( " )
- There are a small number of records where there are double quotes around the field, but there is also a double quote inside the field (double-quote issue noted above). For example, record 124241 has a provider organization name: ,"Wiley"s Pharmacy". Another example is record 171594 that has a second provider mailing address: ,"Building "C:". One program imported this with a break at the internal double quote and other fields were not imported correctly. The other program imported the pharmacy example as everything inside the commas - with all three double quotes.
- There were 6 Replacement NPIs already listed in the file (not able to be confirmed without the kind of file documentation recommended above)
- The distribution of the field “Provider Practice State” included in Appendix 3 provides an excellent example of the types of data entry issues to keep in mind when utilizing the data file. The values are all entered by providers, and do not seem to be edited or checked. The use of upper and lower case alpha characters is not consistent. Values contained in a field may have spelling errors. Values contained in the field may not relate to the field at all (e.g. dates in the State field). However, most of the records seem to have expected values, and the fields are generally pretty useful.

Recommendation: CMS should consider incorporating data integrity checks into the NPPES data application process; similarly, data integrity checks should be performed on the data prior to release

Recommendation: Industry participants should immediately communicate to providers they do business with about any inconsistencies or errors they find on the information about that provider contained in the NPPES data. For example, if there are errors with the UPIN entered, the provider will need to update the record and the industry will need to wait until the next NPPES Downloadable File replacement becomes available.

Recommendation: CMS should use, when applicable, national and international standards (such as ISO) for coding and defining values on the file. Standards should also be used in creating data quality and integrity checks of the data and the file being created for download access.

## V. Acknowledgements

WEDI and the NPI Outreach Initiative wishes to acknowledge the lead authors of this paper for their leadership and contributions

### **Paper Lead Author:**

- Walter G. Suarez, MD – Institute for HIPAA/HIT Education and Research; Co-Chair, NPI Implementation Workgroup; Co-Chair, NPIOI Steering Committee

### **Contributors:**

- Suzanne Stewart, Aurora Health Care
  - Patrice Kuppe, Allina Health System
  - Betsy Clore, Wake Forest University Health Sciences
  - George Vancore, Blue Cross and Blue Shield of Florida
  - Gayle Scott, Tampa General Hospital
  - Martin Morrison, Blue Shield of California
  - Barbara Smith, Thompson Healthcare
- 
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**Appendix 1**  
**Field Distribution and Basic Field Characteristics**  
*(Courtesy of Barbara Smith, Thompson Healthcare)*

Field	Count Missing	Percent Missing
auth official first name	1,777,861	77.01%
auth official last name	1,777,880	77.01%
auth official middle name	2,015,629	87.31%
auth official phone	1,777,832	77.01%
auth official title	1,777,871	77.01%
date last update	68	0.00%
date npi deactivation	2,305,020	99.84%
date npi reactivation	2,305,019	99.84%
date prov enumeration	71	0.00%
ein	1,777,805	77.01%
entity type cd	5	0.00%
npi	5	0.00%
npi deactivation reason cd	2,305,015	99.84%
other prov ID 01	1,007,833	43.66%
other prov ID 02	1,484,858	64.32%
other prov ID 03	1,870,978	81.04%
other prov ID 04	2,135,686	92.51%
other prov ID 05	2,208,840	95.68%
other prov ID 06	2,245,627	97.27%
other prov ID 07	2,264,600	98.09%
other prov ID 08	2,277,363	98.65%
other prov ID 09	2,286,199	99.03%
other prov ID 10	2,292,440	99.30%
other prov ID 11	2,296,887	99.49%
other prov ID 12	2,300,052	99.63%
other prov ID 13	2,302,456	99.73%
other prov ID 14	2,304,158	99.81%
other prov ID 15	2,305,388	99.86%
other prov ID 16	2,306,353	99.90%
other prov ID 17	2,307,017	99.93%
other prov ID 18	2,307,579	99.95%
other prov ID 19	2,308,021	99.97%

Field	Count Missing	Percent Missing
other prov ID 20	2,308,347	99.99%
other prov ID issuer 01	1,969,640	85.32%
other prov ID issuer 02	2,103,439	91.11%
other prov ID issuer 03	2,173,834	94.16%
other prov ID issuer 04	2,222,351	96.26%
other prov ID issuer 05	2,251,114	97.51%
other prov ID issuer 06	2,268,737	98.27%
other prov ID issuer 07	2,279,766	98.75%
other prov ID issuer 08	2,287,566	99.09%
other prov ID issuer 09	2,293,080	99.33%
other prov ID issuer 10	2,297,450	99.52%
other prov ID issuer 11	2,300,435	99.64%
other prov ID issuer 12	2,302,662	99.74%
other prov ID issuer 13	2,304,298	99.81%
other prov ID issuer 14	2,305,532	99.87%
other prov ID issuer 15	2,306,382	99.90%
other prov ID issuer 16	2,307,083	99.93%
other prov ID issuer 17	2,307,571	99.95%
other prov ID issuer 18	2,307,967	99.97%
other prov ID issuer 19	2,308,297	99.99%
other prov ID issuer 20	2,308,536	100.00%
other prov ID state 01	1,279,637	55.43%
other prov ID state 02	1,666,461	72.18%
other prov ID state 03	1,964,010	85.07%
other prov ID state 04	2,169,452	93.97%
other prov ID state 05	2,228,473	96.53%
other prov ID state 06	2,258,458	97.83%
other prov ID state 07	2,274,077	98.50%
other prov ID state 08	2,284,447	98.95%
other prov ID state 09	2,291,521	99.26%
other prov ID state 10	2,296,373	99.47%
other prov ID state 11	2,299,967	99.62%
other prov ID state 12	2,302,380	99.73%
other prov ID state 13	2,304,183	99.81%
other prov ID state 14	2,305,518	99.86%

Field	Count Missing	Percent Missing
other prov ID state 15	2,306,410	99.90%
other prov ID state 16	2,307,112	99.93%
other prov ID state 17	2,307,505	99.95%
other prov ID state 18	2,307,911	99.97%
other prov ID state 19	2,308,203	99.98%
other prov ID state 20	2,308,415	99.99%
other prov ID type cd 01	1,007,814	43.65%
other prov ID type cd 02	1,484,844	64.32%
other prov ID type cd 03	1,870,974	81.04%
other prov ID type cd 04	2,135,681	92.51%
other prov ID type cd 05	2,208,837	95.68%
other prov ID type cd 06	2,245,623	97.27%
other prov ID type cd 07	2,264,597	98.09%
other prov ID type cd 08	2,277,361	98.65%
other prov ID type cd 09	2,286,199	99.03%
other prov ID type cd 10	2,292,440	99.30%
other prov ID type cd 11	2,296,887	99.49%
other prov ID type cd 12	2,300,052	99.63%
other prov ID type cd 13	2,302,456	99.73%
other prov ID type cd 14	2,304,158	99.81%
other prov ID type cd 15	2,305,388	99.86%
other prov ID type cd 16	2,306,353	99.90%
other prov ID type cd 17	2,307,017	99.93%
other prov ID type cd 18	2,307,579	99.95%
other prov ID type cd 19	2,308,021	99.97%
other prov ID type cd 20	2,308,347	99.99%
prov credential text	657,117	28.46%
prov first name	530,998	23.00%
prov gender cd	530,890	23.00%
prov last name	531,087	23.00%
prov license num 01	433,270	18.77%
prov license num 02	2,143,751	92.86%
prov license num 03	2,271,682	98.40%
prov license num 04	2,294,397	99.38%
prov license num 05	2,301,278	99.68%

Field	Count Missing	Percent Missing
prov license num 06	2,303,693	99.79%
prov license num 07	2,305,373	99.86%
prov license num 08	2,306,454	99.91%
prov license num 09	2,307,266	99.94%
prov license num 10	2,307,644	99.96%
prov license num 11	2,307,979	99.97%
prov license num 12	2,308,156	99.98%
prov license num 13	2,308,298	99.99%
prov license num 14	2,308,388	99.99%
prov license num 15	2,308,493	99.99%
prov license num state cd 01	303,422	13.14%
prov license num state cd 02	2,128,919	92.22%
prov license num state cd 03	2,267,069	98.20%
prov license num state cd 04	2,292,492	99.30%
prov license num state cd 05	2,300,176	99.63%
prov license num state cd 06	2,302,948	99.75%
prov license num state cd 07	2,304,853	99.84%
prov license num state cd 08	2,306,050	99.89%
prov license num state cd 09	2,306,975	99.93%
prov license num state cd 10	2,307,415	99.95%
prov license num state cd 11	2,307,828	99.96%
prov license num state cd 12	2,308,027	99.97%
prov license num state cd 13	2,308,193	99.98%
prov license num state cd 14	2,308,298	99.99%
prov license num state cd 15	2,308,419	99.99%
prov mail address 1	161	0.01%
prov mail address 2	1,559,171	67.54%
prov mail city	106	0.01%
prov mail country cd	62	0.00%
prov mail fax	890,129	38.56%
prov mail phone	213,549	9.25%
prov mail state	62	0.00%
prov mail zip	65	0.00%
prov middle name	1,005,767	43.57%
prov name prefix text	1,399,601	60.62%

Field	Count Missing	Percent Missing
prov name suffix text	2,259,953	97.89%
prov org name	1,777,980	77.01%
prov oth credential text	2,256,430	97.74%
prov oth first name	2,231,467	96.66%
prov oth last name	2,231,460	96.66%
prov oth last name type cd	2,231,452	96.66%
prov oth middle name	2,253,690	97.62%
prov oth name prefix text	2,275,659	98.57%
prov oth name suffix text	2,307,641	99.96%
prov oth org name	2,126,492	92.11%
prov oth org name type cd	2,126,448	92.11%
prov practice address 1	398	0.02%
prov practice address 2	1,485,152	64.33%
prov practice city	141	0.01%
prov practice country cd	68	0.00%
prov practice fax	781,894	33.87%
prov practice phone	83	0.00%
prov practice state	67	0.00%
prov practice zip	72	0.00%
prov primary taxon switch 01	85	0.00%
prov primary taxon switch 02	2,063,686	89.39%
prov primary taxon switch 03	2,242,364	97.13%
prov primary taxon switch 04	2,284,192	98.94%
prov primary taxon switch 05	2,294,997	99.41%
prov primary taxon switch 06	2,299,659	99.61%
prov primary taxon switch 07	2,302,450	99.73%
prov primary taxon switch 08	2,304,328	99.81%
prov primary taxon switch 09	2,305,599	99.87%
prov primary taxon switch 10	2,306,327	99.90%
prov primary taxon switch 11	2,306,910	99.93%
prov primary taxon switch 12	2,307,267	99.94%
prov primary taxon switch 13	2,307,559	99.95%
prov primary taxon switch 14	2,307,769	99.96%
prov primary taxon switch 15	2,308,004	99.97%
prov taxonomy cd 01	84	0.00%

Field	Count Missing	Percent Missing
prov taxonomy cd 02	2,063,683	89.39%
prov taxonomy cd 03	2,242,364	97.13%
prov taxonomy cd 04	2,284,192	98.94%
prov taxonomy cd 05	2,294,997	99.41%
prov taxonomy cd 06	2,299,659	99.61%
prov taxonomy cd 07	2,302,450	99.73%
prov taxonomy cd 08	2,304,328	99.81%
prov taxonomy cd 09	2,305,599	99.87%
prov taxonomy cd 10	2,306,327	99.90%
prov taxonomy cd 11	2,306,910	99.93%
prov taxonomy cd 12	2,307,267	99.94%
prov taxonomy cd 13	2,307,559	99.95%
prov taxonomy cd 14	2,307,769	99.96%
prov taxonomy cd 15	2,308,002	99.97%
replacement npa	2,308,642	100.00%

**Appendix 2**  
**Selected Field Distributions**  
*(Courtesy of Barbara Smith, Thompson Healthcare)*

entity type cd	count	% of total
<missing>	5	0.0%
1	1,777,800	77.0%
2	530,843	23.0%

date last update by month/year			
from	to	count	% of total
< missing >		68	0.0%
5/1/2005	5/31/2005	9,746	0.4%
6/1/2005	6/30/2005	31,945	1.4%
7/1/2005	7/31/2005	35,257	1.5%
8/1/2005	8/31/2005	37,305	1.6%
9/1/2005	9/30/2005	32,301	1.4%
10/1/2005	10/31/2005	38,919	1.7%
11/1/2005	11/30/2005	39,127	1.7%
12/1/2005	12/31/2005	37,405	1.6%
1/1/2006	1/31/2006	47,970	2.1%
2/1/2006	2/28/2006	51,616	2.2%
3/1/2006	3/31/2006	60,630	2.6%
4/1/2006	4/30/2006	59,717	2.6%
5/1/2006	5/31/2006	114,276	4.9%
6/1/2006	6/30/2006	128,527	5.6%
7/1/2006	7/31/2006	191,257	8.3%
8/1/2006	8/31/2006	167,256	7.2%
9/1/2006	9/30/2006	120,848	5.2%
10/1/2006	10/31/2006	148,568	6.4%
11/1/2006	11/30/2006	121,414	5.3%
12/1/2006	12/31/2006	96,510	4.2%
1/1/2007	1/31/2007	128,365	5.6%
2/1/2007	2/28/2007	113,021	4.9%
3/1/2007	3/31/2007	136,097	5.9%
4/1/2007	4/30/2007	100,595	4.4%
5/1/2007	5/31/2007	129,354	5.6%
6/1/2007	6/30/2007	55,906	2.4%
7/1/2007	7/31/2007	41,387	1.8%
8/1/2007	8/31/2007	33,252	1.4%
9/1/2007	9/30/2007	9	0.0%

npi deactivation reason cd		count
<missing>		2,305,015
06		1
11		2
25		1
DB	Disbandment	10
FR	Fraud	21
OT	Other	3,598

other prov ID type cd 01		count	% of total
<missing>		1,007,814	43.7%
01	Other	254,050	11.0%
02	Medicare UPIN	355,180	15.4%
04	Medicare ID - Type Unspec.	394,838	17.1%
05	Medicaid	264,307	11.4%
06	Medicare OSCAR / Certific.	6,387	0.3%
07	Medicare NSC	8,335	0.4%
08	Medicare PIN	17,737	0.8%

other prov ID type cd 02		count	% of total
<missing>		1,484,844	64.3%
01	Other	158,879	6.9%
02	Medicare UPIN	233,815	10.1%
04	Medicare ID - Type Unspec.	247,613	10.7%
05	Medicaid	166,577	7.2%
06	Medicare OSCAR / Certific.	2,480	0.1%
07	Medicare NSC	3,522	0.2%
08	Medicare PIN	10,918	0.5%

other prov ID type cd 03		count	% of total
<missing>		1,870,974	81.0%
01	Other	110,942	4.8%
02	Medicare UPIN	109,952	4.8%
04	Medicare ID - Type Unspec.	114,968	5.0%
05	Medicaid	93,353	4.0%
06	Medicare OSCAR / Certific.	1,080	0.0%
07	Medicare NSC	1,502	0.1%
08	Medicare PIN	5,877	0.3%

**Appendix 3**  
**Distribution of Values for “Provider\_Practice\_State” Field**  
*(Courtesy of Barbara Smith, Thompson Healthcare)*

prov practice state	count	% of total
	67	0.0%
(US military)	1	0.0%
-	1	0.0%
--	2	0.0%
0000	1	0.0%
07/18/2006	1	0.0%
09169	1	0.0%
09180	1	0.0%
09636	1	0.0%
1	1	0.0%
96602	1	0.0%
A.E.	2	0.0%
AA	35	0.0%
AB	5	0.0%
AE	1891	0.1%
AEA	2	0.0%
AE`	1	0.0%
AF	1	0.0%
AFGHANISTAN	1	0.0%
AI	1	0.0%
AK	7493	0.3%
AL	28953	1.3%
AP	1065	0.0%
APO	18	0.0%
APO AE	1	0.0%
APO AE	15	0.0%
APO AP	11	0.0%
APO Ap	1	0.0%
APO EUROPE	1	0.0%
APO, AE	1	0.0%
APO, AP	1	0.0%
APO-AP	1	0.0%
AR	21702	0.9%
AS	24	0.0%
AU	2	0.0%
AZ	44333	1.9%
Abu Dhabi	2	0.0%
Adana	1	0.0%

prov practice state	count	% of total
Ae	2	0.0%
Alberta	5	0.0%
Alexandria	1	0.0%
Alpes-Maritimes	1	0.0%
American Samoa	2	0.0%
Andalucia	1	0.0%
Anderson	1	0.0%
Andhra Pradesh	1	0.0%
Antartica	1	0.0%
Aomori	2	0.0%
Aomori-ken	1	0.0%
Ap	1	0.0%
Apo	1	0.0%
Apurimac	1	0.0%
Area Pacific	1	0.0%
Armed Forces Europe	2	0.0%
Armed Forces Pacific	1	0.0%
Attikis	1	0.0%
Aviano AB	1	0.0%
Azores	2	0.0%
B.C.	2	0.0%
BAHRAIN	1	0.0%
BC	8	0.0%
BE	1	0.0%
BELGIUM	2	0.0%
BO	1	0.0%
BOSNIA	1	0.0%
BW	1	0.0%
Baden Wirttemberg	1	0.0%
Baden Wurtemberg	1	0.0%
Baden Wurtembourg	7	0.0%
Baden Wurtemberg	1	0.0%
Baden-Wurtemberg	1	0.0%
Baden-Wurtenburg	1	0.0%
Baden-Wurttemberg	1	0.0%
Bahrain	2	0.0%
Baja California	6	0.0%
Baku	1	0.0%
Bangkok	2	0.0%
Baumholder	1	0.0%
Bavaria	15	0.0%
Bayern	1	0.0%
Belgium	1	0.0%
Birmingham	1	0.0%
Bitburg	1	0.0%
Box 162	1	0.0%
Box 283	1	0.0%

prov practice state	count	% of total
British Columbia	1	0.0%
British Columbia	2	0.0%
British Indian Ocean Territory	1	0.0%
Brussels	1	0.0%
Buenos Aires	1	0.0%
Bulacan	1	0.0%
CA	263719	11.4%
CAMARINES SUR	1	0.0%
CAMP COURTNEY	1	0.0%
CAMP ZAMA	1	0.0%
CE	2	0.0%
CH	1	0.0%
CH-1211 Geneva	1	0.0%
CHIH	1	0.0%
CHIHUAHUA	1	0.0%
CMR 402	1	0.0%
CN	1	0.0%
CO	39827	1.7%
CRETE	1	0.0%
CT	31147	1.3%
CUBA	4	0.0%
Cadiz	2	0.0%
Cairo	1	0.0%
Camp Casey	2	0.0%
Camp Zama	1	0.0%
Campagna	1	0.0%
Campangia	1	0.0%
Campania	1	0.0%
Capital	1	0.0%
Caserta	1	0.0%
Catania	1	0.0%
Cavite	1	0.0%
Cayman Islands	1	0.0%
Ceara	1	0.0%
Central Region	1	0.0%
Chaing Mai	1	0.0%
Charlottesville	2	0.0%
Chiang Mai	1	0.0%
Chih	16	0.0%
Chihuahua	5	0.0%
Coahuila	1	0.0%
Commune de Niamey	1	0.0%
Cordoba	1	0.0%
County Cork	1	0.0%
Cuba	2	0.0%
D.N. Lower galillee	1	0.0%
DC	8868	0.4%

prov practice state	count	% of total
DE	8119	0.4%
Daegu	1	0.0%
District of Columbia	1	0.0%
Doha	1	0.0%
Dongduchon	1	0.0%
Dublin	1	0.0%
EAST ANGLIA	1	0.0%
ENGLAND	3	0.0%
EO	1	0.0%
ES	2	0.0%
EUROPE	2	0.0%
Eastern Province	1	0.0%
England	4	0.0%
Erd	1	0.0%
Europe	7	0.0%
FL	132294	5.7%
FM	25	0.0%
FP	1	0.0%
FPO	14	0.0%
FPO AP	1	0.0%
FPO AP	2	0.0%
Florida	2	0.0%
Fort Hood,Tx	1	0.0%
France	1	0.0%
Fruli	1	0.0%
Fussa She	1	0.0%
Fussa-shi	1	0.0%
Fussa-shi, Tokyo	1	0.0%
GA	56675	2.5%
GB	5	0.0%
GE	1	0.0%
GERMANY	11	0.0%
GOA	1	0.0%
GU	375	0.0%
GUAM	2	0.0%
GUAYNABO	1	0.0%
Galil	1	0.0%
Gaum	1	0.0%
German	1	0.0%
Germany	60	0.0%
Gricignano	1	0.0%
Guam	4	0.0%
Guam USA	1	0.0%
Guanajuato	1	0.0%
Gunsan	1	0.0%
Gyung Gi Do	1	0.0%
HI	10336	0.4%

prov practice state	count	% of total
HN	1	0.0%
Harrogate	1	0.0%
Hawaii	1	0.0%
Hawke's Bay	1	0.0%
Heredia	1	0.0%
Hesse	1	0.0%
Hessen	12	0.0%
Hiroshima	1	0.0%
Hungary	1	0.0%
IA	22708	1.0%
ID	10989	0.5%
IL	89691	3.9%
IN	42048	1.8%
INCIRLIK	1	0.0%
IRAQ	4	0.0%
ISRAEL	2	0.0%
ITALY	5	0.0%
Iceland	4	0.0%
Ile-de-France	1	0.0%
Iraq	1	0.0%
Isarel	1	0.0%
Israel	11	0.0%
Istanbul	1	0.0%
Italy	11	0.0%
Iwakuni	1	0.0%
Iwate	1	0.0%
JAPAN	22	0.0%
JP	2	0.0%
Japan	19	0.0%
Jeddah	2	0.0%
Jerusalem	1	0.0%
KOREA	13	0.0%
KS	22671	1.0%
KY	31902	1.4%
Kaiserslaughtern	1	0.0%
Kanagawa	3	0.0%
Karnataka	3	0.0%
Kentucky	2	0.0%
Kingdom of Bahrain	1	0.0%
Kingston	1	0.0%
Korea	10	0.0%
Kunsan	2	0.0%
Kunsan AFB	1	0.0%
Kuwait	1	0.0%
LA	30300	1.3%
LB	1	0.0%
Lajes Field, Azores	1	0.0%

prov practice state	count	% of total
Lakenheath	1	0.0%
Landstuhl	5	0.0%
Libya	1	0.0%
Lima	1	0.0%
Limburg	1	0.0%
Limerick	1	0.0%
Luwan	1	0.0%
MA	73041	3.2%
MANNHEIM	1	0.0%
MB	1	0.0%
MD	46912	2.0%
ME	13791	0.6%
MH	3	0.0%
MI	78598	3.4%
MIDDLESEX	1	0.0%
MILITARY	1	0.0%
MN	45375	2.0%
MO	46065	2.0%
MP	76	0.0%
MS	16570	0.7%
MT	8617	0.4%
MX	3	0.0%
Madagascar	1	0.0%
Maharashtra	1	0.0%
Manama	1	0.0%
Manawatu	1	0.0%
Manila	1	0.0%
Maynas	1	0.0%
Metro Manila	1	0.0%
Mexico	3	0.0%
Mexico DF	1	0.0%
Miato-ku	1	0.0%
Middle East	1	0.0%
Military	1	0.0%
Misawa	1	0.0%
Misawa Air Base, United States Air Force	1	0.0%
Moscow oblast	1	0.0%
NA	1	0.0%
NAF Atsugi	1	0.0%
NAKAGAMI-GUN, OKINAWA	1	0.0%
NAPLES	1	0.0%
NATO AB	1	0.0%
NC	71142	3.1%
ND	6693	0.3%
NE	15008	0.7%
NEGISHI	1	0.0%
NF	4	0.0%

prov practice state	count	% of total
NH	12543	0.5%
NJ	65590	2.8%
NM	17065	0.7%
NRW	1	0.0%
NS	6	0.0%
NSW	1	0.0%
NV	13390	0.6%
NWFP	1	0.0%
NY	164415	7.1%
Naples	2	0.0%
Naval Base	1	0.0%
Neckar	1	0.0%
Nejd	1	0.0%
New Brunswick	1	0.0%
New Territories	1	0.0%
New York	1	0.0%
Nonthaburi	1	0.0%
Norfolk	1	0.0%
Norrhein Westfalen	1	0.0%
North Yorkshire	1	0.0%
Northland	1	0.0%
Not Applicable	5	0.0%
Nova Scotia	1	0.0%
OH	84626	3.7%
OK	27638	1.2%
OKINAWA	6	0.0%
ON	26	0.0%
ONT	1	0.0%
ONTARIO	2	0.0%
OR	32492	1.4%
Oberpfalz, bayern	1	0.0%
Ohio	1	0.0%
Okinawa	31	0.0%
Okinawa Japan	1	0.0%
Okinawa,	1	0.0%
Ont	1	0.0%
Ontario	23	0.0%
Ontatio	1	0.0%
Osaka	1	0.0%
Osan	1	0.0%
Osan AB	2	0.0%
Ostfold	1	0.0%
P.R.	2	0.0%
PA	106375	4.6%
PACAF	1	0.0%
PAKISTAN	1	0.0%
PH	1	0.0%

prov practice state	count	% of total
PI	1	0.0%
PISA	1	0.0%
PN	2	0.0%
POLK	1	0.0%
PR	23290	1.0%
PUERTO RICA	1	0.0%
PUERTO RICO	12	0.0%
PW	29	0.0%
PYONGTAEK	1	0.0%
Pacific	1	0.0%
Pakistan	1	0.0%
Panama	1	0.0%
Peurto Rico	1	0.0%
Pisa	1	0.0%
Portugal	2	0.0%
Primasens	1	0.0%
Puerto Rico	25	0.0%
Punjab	3	0.0%
QC	16	0.0%
QUEENSLAND	1	0.0%
Quebec	5	0.0%
Queensland	2	0.0%
Quest	1	0.0%
RHEINLAND PFALZ	1	0.0%
RHINELAND PLAZ	1	0.0%
RI	11168	0.5%
RLP	1	0.0%
RM	1	0.0%
Rajasthan	1	0.0%
Ramstein	1	0.0%
Republic Marshall Islands	1	0.0%
Republic of Korea	2	0.0%
Republic of Korea (ROK)	1	0.0%
Rhein-Phalz	1	0.0%
Rheinland Pfalz	1	0.0%
Rheinland-Pfalz	3	0.0%
Rheinland/Pfalz	1	0.0%
Rhineland Pfalz	2	0.0%
Rhineland-Pfalz	1	0.0%
Rhineland/Pfalz	1	0.0%
Rift Valley	1	0.0%
Riyadh	1	0.0%
Romania	2	0.0%
Rota	2	0.0%
Russian Federation	1	0.0%
S. Korea	1	0.0%
SA	2	0.0%

prov practice state	count	% of total
SC	30212	1.3%
SD	7349	0.3%
SE	1	0.0%
SEYHAN	1	0.0%
SK	2	0.0%
SONORA	1	0.0%
SOUTH KOREA	1	0.0%
SPAIN	1	0.0%
SUFFOLK, UK	1	0.0%
Saarland	1	0.0%
Saipan	2	0.0%
Saitama	1	0.0%
Santiago	1	0.0%
Sask	1	0.0%
Saskatchewan	1	0.0%
Saudi Arabia	2	0.0%
Scotland	1	0.0%
Seoul	1	0.0%
Serbia	1	0.0%
Shanghai	1	0.0%
Sicily	2	0.0%
Sindh	1	0.0%
Sor Trondelag	1	0.0%
South Korea	4	0.0%
Spain	3	0.0%
Spangdahlem AB	1	0.0%
St. Croix	1	0.0%
St. Michael	1	0.0%
Suffolk	15	0.0%
Sulfolk	1	0.0%
Switzerland	1	0.0%
TH	1	0.0%
TN	46270	2.0%
TURKEY	1	0.0%
TX	137784	6.0%
Taipei	1	0.0%
Taiwan	1	0.0%
Tamaulipas	1	0.0%
Tenerife	1	0.0%
Terceira	1	0.0%
Texas	2	0.0%
Tokyo	4	0.0%
Turkey	6	0.0%
U.S. Virgin Islands	1	0.0%
U.S.V.I.	1	0.0%
UK	3	0.0%
UNITED STATES	1	0.0%

prov practice state	count	% of total
US	4	0.0%
US Navy	1	0.0%
US Virgin Islands	1	0.0%
USA	3	0.0%
USVI	2	0.0%
UT	17208	0.7%
United Kingdom	2	0.0%
United States	1	0.0%
VA	52239	2.3%
VE	1	0.0%
VI	417	0.0%
VT	6685	0.3%
Vaihingen	1	0.0%
Vaud	1	0.0%
Vicenza	1	0.0%
Victoria	1	0.0%
Virgin Gorda	1	0.0%
Virgin Islands	1	0.0%
Vlaams-Brabant	1	0.0%
WA	58319	2.5%
WI	45027	2.0%
WV	14059	0.6%
WY	4234	0.2%
Waikato	1	0.0%
West Midlands	1	0.0%
YAMAGUCHI	1	0.0%
YES	1	0.0%
Yamanashi	1	0.0%
Yokohama	1	0.0%
Yokosuka	2	0.0%
Yokota AB	2	0.0%
Yong San	1	0.0%
Yongsan	1	0.0%
Yunnan	1	0.0%
Zambales	1	0.0%
Zurich	1	0.0%
ae	41	0.0%
andalucia	1	0.0%
ap	41	0.0%
apo	1	0.0%
apo ae	1	0.0%
apo ae 09244	1	0.0%
apo, ap	1	0.0%
baden wurtemberg	1	0.0%
bavaria	1	0.0%
belgium	1	0.0%
british indian ocean territy	1	0.0%

prov practice state	count	% of total
ca	1	0.0%
caesarea	1	0.0%
chihuahua	1	0.0%
delhi	1	0.0%
di Aversa CE	1	0.0%
florida	1	0.0%
fpo	1	0.0%
fpo ae	2	0.0%
fpo ap	1	0.0%
germany	3	0.0%
guam	1	0.0%
indiana	1	0.0%
istanbul	1	0.0%
japan	2	0.0%
kyungkido	1	0.0%
manila	2	0.0%
naples	1	0.0%
niedersachsen	1	0.0%
ny	1	0.0%
okinawa, japan	1	0.0%
ontario	1	0.0%
pirmasens	1	0.0%
pr	1	0.0%
puerto rico	4	0.0%
reinland-pfalz	1	0.0%
rheinland Phalz	1	0.0%
rhineland pflatz	1	0.0%
rhineland-pfalz	1	0.0%
rockland county	1	0.0%
seoul	1	0.0%
south korea	1	0.0%
southwest asia	1	0.0%
unk	1	0.0%
us virgin islands	1	0.0%
usa	1	0.0%
washington	1	0.0%
yokosuka	1	0.0%