## Current Trends

## Measles - United States, First 26 Weeks, 1986

During the first 26 weeks of 1986, a provisional total of 3,921 measles cases was reported in the United States, an increase of $117.6 \%$ over the 1,802 cases reported during the same period in 1985 (1). The overall incidence rate for the 26 -week period in 1986 was 1.7/100,000 population, compared with $0.8 / 100,000$ for 1985. Nine states accounted for 3,185 (81.2\%) cases: New Jersey (876), Illinois (412), New York (369), California (299), Arkansas (278), South Carolina (274), Arizona (243), Texas (242), and Wisconsin (192). Eighteen states and New York City had incidence rates greater than $1 / 100,000$ population. Seven states and New York City had incidence rates greater than 3/100,000 population: Arkansas, New Jersey, Arizona, South Carolina, Kansas, Wisconsin, and Illinois. During the first 26 weeks of 1986, 42 states and $9.0 \%$ of the nation's 3,139 counties reported measles cases (indigenous or imported), compared with 20 states and $2.5 \%$ of the counties in 1985.

Eighty outbreaks (i.e., five or more epidemiologically linked cases) have occurred: nine had more than 100 cases each (three of these had more than 200 cases); five had 51-100 cases each; 11 had 26-50 cases each; and 55 had up to 25 cases.

Detailed information was provided to CDC's Division of Immunization on all 3,921 cases. Of these, 3,824 ( $97.5 \%$ ) met the standard case definition for measles*, and 1,174 (29.9\%) were serologically confirmed. The number of cases reported weekly began to rise soon after the first of the year and reached a maximum at week 11 . The decrease in the number of patients with rash onset after week 21 may be due to a delay in reporting rather than a true decrease (Figure 1).

The incidence rate of measles in all age groups increased substantially between 1985 and 1986. However, the age characteristics of cases differed between the two 26 -week periods (Table 1). During the first 26 weeks of 1985, the highest incidence rate was reported for persons 15-19 years of age. By comparison, during the first 26 weeks of 1986, the highest incidence rate occurred among children $0-4$ years of age ( $7.0 / 100,000$ ), followed by children $10-14$ years of age $(5.7 / 100,000)$. The latter group had the greatest increase in incidence rate between years. Of the 1,249 reported cases among preschool-aged children, 355 ( $28.4 \%$ ) were infants under 1 year of age; 212 (17.0\%) were $12-14$ months of age; 55 (4.4\%) were 15 months of age; and 627 ( $50.2 \%$ ) were 16 months- 4 years of age.

[^0]Measles - Continued
Of the 2,466 (62.9\%) patients for whom setting of transmission was reported, 1,371 (55.6\%) acquired measles in primary or secondary schools; 203 ( $8.2 \%$ ), in colleges or universities; 423 ( $17.2 \%$ ), at home; 143 ( $5.8 \%$ ), in medical settings; 72 ( $2.9 \%$ ), in day care; and 254 ( $10.3 \%$ ), in a variety of other settings, including churches, sporting events, and summer camps.

Seventy-three ( $1.9 \%$ ) cases were international importations. An additional 41 cases were epidemiologically linked to an international importation within two generations of infection.

FIGURE 1. Reported measles cases, by week of rash onset and by week of report* United States, first 26 weeks, 1986


*MMWR data; includes patients with rash onset in 1985.

TABLE 1. Age distribution and estimated incidence rates of measles - United States, first 26 weeks, 1985* and 1986*

| Age group (yrs.) | 1985 |  |  | 1986 |  |  | Percent change |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | No. | (\%) | Rate ${ }^{\dagger}$ | No. | (\%) | Rate ${ }^{\dagger}$ |  |
| 0-4 | 466 | (25.9) | 2.5 | 1,249 | (31.9) | 7.0 | +180.0 |
| 5-9 | 152 | (8.4) | 0.9 | 430 | (11.0) | 2.6 | +188.9 |
| 10-14 | 319 | (17.7) | 1.8 | 1,006 | (25.7) | 5.7 | +216.7 |
| 15-19 | 603 | (33.5) | 3.1 | 749 | (19.1) | 3.9 | +25.8 |
| 20-24 | 175 | (9.7) | 0.8 | 243 | (6.2) | 1.1 | +37.5 |
| $\geqslant 25$ | 86 | (4.8) | 0.1 | 224 | (5.7) | 0.2 | +100.0 |
| Unknown | 0 | (0.0) |  | 20 | (0.5) |  |  |
| Total | 1,801 | (100.0) | 0.8 | 3,921 | (100.0) | 1.7 | +112.5 |

[^1]Therefore, a total of $114(2.9 \%)$ of all cases were programmatically classified as international importations during this period (2). However, it is likely that additional cases-for which source information was not available-were related to international importations.

A total of $1,730(44.1 \%)$ patients had been vaccinated on or after the first birthday, including 724 ( $18.5 \%$ ) who were vaccinated at $12-14$ months of age. There were 2,001 ( $51.0 \%$ ) unvaccinated patients, and $190(4.8 \%)$ with histories of inadequate vaccination (vaccinated before the first birthday).

Of the 3,921 cases, 1,403 ( $35.8 \%$ ) were classified as preventable (2) (Table 2). From 1985 to 1986, the absolute number and proportion of cases that were preventable increased in each age group. The highest proportion of preventable cases occurred among persons who were not of school age: $85.0 \%$ of cases among children 16 months -4 years of age were preventable (Table 2). Only $\mathbf{2 8 . 7 \%}$ of cases among school-aged persons 5-19 years of age were preventable; however, $44.1 \%$ of all preventable cases occurred in this age group.

TABLE 2. Age distribution and preventability of measles cases - United States, first 26 weeks, 1985* and 1986*

| Age group | 1985 |  |  | 1986 |  |  | Percent change ${ }^{\dagger}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Total cases | Preventable cases |  | Total cases | Preventable cases |  |  |
|  |  | No. |  |  | No. |  |  |
| $\leqslant 15 \mathrm{mos}$. | 242 | 0 | (0.0) | 622 | 0 | (0.0) | 0.0 |
| 16 mos.-4yrs. | 224 | 155 | (69.2) | 627 | 533 | (85.0) | +22.8 |
| 5-9 yrs. | 152 | 32 | (21.1) | 430 | 144 | (33.5) | +58.8 |
| 10-14 yrs. | 319 | 52 | (16.3) | 1,006 | 242 | (24.1) | +47.9 |
| 15-19 yrs. | 603 | 135 | (22.4) | 749 | 238 | (31.8) | +42.0 |
| 20-24 yrs. | 175 | 60 | (34.3) | 243 | 174 | (71.6) | +108.7 |
| 25-29 yrs. | 53 | 32 | (60.4) | 88 | 72 | (81.8) | +35.4 |
| $\geqslant 30 \mathrm{yrs}$. | 33 | 0 | (0.0) | 136 | 0 | (0.0) | 0.0 |
| Total | 1,801 | 466 | (25.9) | 3,901§ | 1,403 | (35.8) | +38.2 |

*Provisional data.
${ }^{\dagger}$ In percentage of preventable cases.
$\S_{\text {Excludes }} 20$ for whom preventability status is not known.
TABLE 3. Reasons measles cases were classified as nonpreventable - United States, first 26 weeks, 1986*

| Causes of nonpreventability | No. cases (\%) |  |  |  | Percentage of total cases |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Persons < 16 mos. of age |  | (24.7) |  |  | 15.9 |
| Persons born before 1957 | 136 |  |  |  | 3.5 |
| Persons 16 mos.-28 yrs. of age | 1,760 | (69.9) |  |  | 44.9 |
| Adequately vaccinated |  |  | 1,658 | (94.2) |  |
| Prior physician diagnosis |  |  |  | (0.1) |  |
| Non-U.S. citizens |  |  |  |  |  |
| Exemptions ${ }^{\dagger}$ |  |  |  |  |  |
| Laboratory evidence of immunity |  |  | 0 |  |  |
| Total | 2,518 | (100.0) |  |  | 64.2 |

[^2]Measles - Continued
Of the 2,518 nonpreventable cases, 622 ( $24.7 \%$ ) were among persons too young for routine vaccination (under 16 months of age), and 136 ( $5.4 \%$ ) were too old (born before 1957). Of the 1,760 who were between 16 months and 29 years of age, 1,658 ( $94.2 \%$ ) had been vaccinated on or after the first birthday; one ( $0.06 \%$ ) had a prior physician diagnosis of measles; 28 (1.6\%) were non-U.S. citizens; and 73 (4.1\%) had medical contraindications or exemptions under state law (Table 3).
Reported by Div of Immunization, Center for Prevention Svcs, CDC.
Editorial Note: The 3,921 measles cases reported through week 26 of 1986 exceed the total number of reported cases in any year since 1980, when 11,564 cases were reported during the comparable period. The 1986 figure is almost four times higher than the all-time low of 1,037 cases reported during the same period of 1983. Although the number of reported cases still represents less than $1 \%$ of that in the prevaccine era (3), when an average over 500,000 cases was reported annually, there is concern about the recent increase.

Incidence rates have increased in all age groups in 1986. The greatest increase (216.7\%) occurred among persons 10-14 years of age. The highest incidence rate was in preschoolers who have accounted for almost one-third of all cases in 1986. The large number of cases among children 10-14 years of age was due to several large outbreaks in middle schools this
(Continued on page 533)

TABLE I. Summary-cases specified notifiable diseases, United States

| Disease | 33rd Week Ending |  |  | Cumulative, 33rd Week Ending |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { Aug. } 16, \\ 1986 \\ \hline \end{gathered}$ | $\begin{gathered} \hline \text { Aug. } 17, \\ 1985 \\ \hline \end{gathered}$ | $\begin{gathered} \text { Median } \\ 1981-1985 \\ \hline \end{gathered}$ | $\begin{gathered} \text { Aug. 16, } \\ 1986 \\ \hline \end{gathered}$ | $\begin{gathered} \hline \text { Aug. } 17, \\ 1985 \\ \hline \end{gathered}$ | $\begin{gathered} \text { Median } \\ 1981-1985 \\ \hline \end{gathered}$ |
| Acquired Immunodeficiency Syndrome (AIDS) | 303 | 188 | N | 7.936 | 4,819 | N |
| Aseptic meningitis | 347 | 457 | 432 | 4,544 | 4,237 | 4,237 |
| Encephalitis: Primary larthropod-bome \& unspec) | 33 | 39 | 47 | 578 68 | 656 87 | 705 |
| Post-infectious <br> Gonorrhea: Civilian | 18.827 | 19.893 | 18.903 | 68 | 658 | 64 |
| Gonorrhea: Civilian | 18,827 | 19,893 | 18.903 | 546,209 | 550,667 | 562,150 |
| Hepatis: Military | 346 | 511 | 511 | 10,441 | 13,296 | 15,420 |
| Hepatitis: Type A | 362 | 416 | 434 | 13,615 | 13,643 | 13,643 |
| Type B | 458 | 523 | 466 | 16,193 | 15,953 | 14,863 |
| Non A, Non B | 62 | 83 | N | 2,233 | 2,594 | N |
| Unspecified | 71 | 110 | 150 | 2,938 | 3,605 | 4,533 |
| Legionellosis | 18 | 10 | N | 397 | 451 | N |
| Leprosy | 1 | 9 | 7 | 169 | 250 | 161 |
| Malaria | 17 | 46 | 39 | 609 | 641 | 641 |
| Measles: Total ${ }^{\circ}$ | 177 | 64 | 25 | 5.114 | 2,300 | 2,197 |
| indigenous Imported | 174 3 | 52 | N N | 4.879 235 | 1.930 370 | N N |
| Meningococcal infections: Total | 17 | 23 | N 36 | 1.724 | 370 1.635 | 1,944 |
| Civilian Military | 17 | 23 | 36 | 1.722 | 1,629 | 1,940 |
| Mumps Military | 55 | 28 | 28 | 3,210 | 2,117 | 9 2,360 |
| Pertussis | 68 | 86 | 54 | 1,823 | 1,412 | 1,308 |
| Rubella (German measles) | 11 | 10 | 10 | +379 | +476 | , 745 |
| Syphilis (Primary \& Secondary): Civilian <br> Military | 390 | 561 | 640 | 16.293 | 16,827 | 19,051 |
| Military <br> Toxic Shock syndrome | 12 | 3 7 | 6 $\mathbf{N}$ | 110 226 | 116 252 | 238 |
| Tuberculosis | 357 | 481 | N 478 | 13.597 | 13,300 | 14.62 |
| Tularemia | 2 | 2 | 8 | $\begin{array}{r}13,597 \\ \hline 175\end{array}$ | 13.300 110 | 14,621 148 |
| Typhoid fever | 4 | 11 | 13 | 175 | 217 | 242 |
| Typhus fever, tick-borne (RMSF) Pabies, animal | 36 | 35 | 36 | 486 | 433 | 720 |
| Rabies, animal | 131 | 99 | 140 | 3,483 | 3,356 | 4,038 |

TABLE II. Notifiable diseases of low frequency, United States

|  | Cum 1986 |  | Cum 1986 |
| :---: | :---: | :---: | :---: |
| Anthrax | - | Leptospirosis | 23 |
| Botulism: Foodborne | 6 | Plague | 4 |
| Infant (Utah 1) | 30 | Poliomyelitis, Paralytic | - |
| Other | 1 | Psittacosis (N.C. 1, Colo. 2) | 67 |
| Brucellosis (Va. 2, Mont. 1, Colo. 2, N.Mex. 1) | 47 | Rabies, human | - |
| Cholera | 2 | Tetanus (La. 1, Idaho 1) | 38 |
| Congenital rubella syndrome | 107 | Trichinosis | 20 |
| Congenital syphilis, ages $<1$ year Diphtheria | 107 | Typhus fever, flea-borne (endemic, murine) | 32 |

-Two of the 177 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending
August 16, 1986 and August 17, 1985 (33rd Week)

| Reporting Area | AIDS | Aseptic Meningitis | Encephalitis |  | Gonorrhea (Civilian) |  | Hepatitis (Viral), by type |  |  |  | Legionel losis | Leprosy |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Primary | $\begin{aligned} & \text { Post-in- } \\ & \text { fectious } \end{aligned}$ |  |  | A | B | NA,NB | Unspectfied |  |  |
|  | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | 1986 | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | $\begin{aligned} & \text { Cum } \\ & 1985 \end{aligned}$ | 1986 | 1986 | 1986 | 1986 | 1986 | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ |
| UNITED STATES | 7.936 | 347 | 578 | 68 | 546,209 | 550,667 | 362 | 458 | 62 | 71 | 18 | 169 |
| NEW ENGLAND | 347 | 18 | 17 | 3 | 13,428 | 14,775 | 9 | 26 | 3 | 4 | 1 | 6 |
| Maine | 12 | 2 | - | - | 570 | 697 | - | 4 | - | - | - | - |
| NH | 8 | 1 | 2 | - | 344 | 355 | - | - | - | - | - | - |
| Vt | 3 | - | 2 | 2 | 162 | 196 | - | 1 | - | - | 1 | - |
| Mass | 187 | 7 | 4 | - | 5.441 | 5,749 | 3 | 19 | 3 | 4 | - | 6 |
| RI | 19 | 5 | - | - | 1,092 | 1.132 | 1 | - | - | - | - | - |
| Conn | 118 | 3 | 9 | 1 | 5,819 | 6.646 | 5 | 2 | - | - | - | - |
| MID ATLANTIC | 3.009 | 48 | 67 | 6 | 93,374 | 80,080 | 14 | 31 | 1 | 22 | - | 11 |
| Upstate $\mathrm{N} Y$ | 295 | 15 | 26 | 4 | 10,957 | 10,601 | 8 | 9 | 1 | - | - | 1 |
| NY City | 2.023 | 15 | 14 | - | 54,689 | 40,326 | 2 | 3 | - | 19 | - | 9 |
| NJ | 489 | 18 | 10 | - | 11.877 | 12,180 | 4 | 19 | - | 3 | - | - |
| Pa | 202 | - | 17 | 2 | 15,851 | 16.973 | - | - | - | . | - | 1 |
| EN CENTRAL | 487 | 91 | 158 | 10 | 71,739 | 74,012 | 13 | 45 | 7 | 1 | 5 | 4 |
| Ohio | 100 | 15 | 47 | 2 | 18.435 | 18.767 | 4 | 17 | 3 | - | 5 | - |
| Ind | 46 | 21 | 38 | 3 | 7,670 | 7.546 | 2 | 9 | 3 | 1 | - | - |
| III | 238 | 21 | 33 | 4 | 20,473 | 20,001 | - | - | - | - | - | 3 |
| Mich | 78 | 34 | 33 | 1 | 22,393 | 20,771 | 7 | 19 | 1 | - | - | 1 |
| Wis | 25 | - | 7 | - | 2,768 | 6,927 | - | - | - | - | - | - |
| W N CENTRAL | 153 | 8 | 25 | 8 | 23.558 | 25.504 | 9 | 16 | 4 | - | 2 | 2 |
| Minn | 60 | 1 | 12 |  | 3,345 | 3,719 | - | 2 | 1 | - | 1 | 1 |
| lowa | 10 | - | 7 | - | 2,385 | 2,775 | 2 | 4 | - | - | - | . |
| Mo | 51 | 3 | . | - | 11,860 | 12,292 | 3 | 5 | 1 | - | 1 | - |
| N Dak | 2 | - | - | - | 206 | 171 | - | . | . | - | . | - |
| S Dak | 1 | - | 5 | - | 480 | 471 | 3 | - | - | - | - | - |
| Nebr | 6 | 1 |  | 1 | 1.793 | 2.234 | - | 2 | - | - | - |  |
| Kans | 23 | 3 | 1 | 7 | 3.489 | 3.842 | 1 | 3 | 2 | - | - | 1 |
| S ATLANTIC | 1,109 | 91 | 76 | 23 | 141,677 | 142,302 | 50 | 137 | 16 | 11 | 4 | 1 |
| Del | 16 | 4 | 5 |  | 2,252 | 2,569 | 1 | 1 | 1 | - | - | - |
| Md | 123 | 19 | 25 | 1 | 16.582 | 18,367 | 2 | 20 | - | - | - | - |
| D C | 132 | 1 | - | 1 | 10.412 | 9.616 | - | 2 | - | - | - | - |
| Va | 106 | 28 | 23 | 1 | 11,718 | 11.927 | 5 | 36 | 6 | 2 | 2 | 1 |
| W Va | 6 | 4 | 11 | - | 1.414 | 1.533 | - | 2 | - | - | - | - |
| NC | 43 | 6 | 10 | 1 | 21,666 | 21,564 | 6 | 5 | - | 1 | - | - |
| SC | 23 | - |  | - | 12,312 | 13,828 | - | 18 | 1 | . | 1 | - |
| Ga | 170 | 5 | - | 1 | 24,057 | 28,639 | 4 | 24 | 3 | - | - | - |
| Fla | 490 | 24 | 2 | 18 | 41,264 | 34,259 | 32 | 29 | 5 | 8 | 1 | - |
| ES CENTRAL | 102 | 11 | 40 | 3 | 44.586 | 46,418 | 5 | 31 | 3 | - | - | 1 |
| Ky | 21 | 9 | 19 | 1 | 4,923 | 5.250 | 3 | 4 | 1 | - | - | - |
| Tenn | 53 | 2 | 3 | 1 | 17.193 | 17.856 | 1 | 7 | - | - | - | - |
| Ala | 18 | . | 17 | 1 | 12,782 | 14,133 | 1 | 11 | 2 | - | - | 1 |
| Miss | 10 | - | 1 | - | 9,688 | 9,179 | - | 9 | - | - | - | - |
| WS CENTRAL | 482 | 32 | 73 | 6 | 65,456 | 69,643 | 30 | 20 | 1 | 13 | - | 12 |
| Ark | 21 | - | - | 2 | 6,204 | 6,676 | - | . | - | - | - | - |
| La | 102 | - | 3 | 2 | 11,822 | 13.768 | 1 | - | - | - | - | 1 |
| Okla | 27 | 3 | 14 | - | 7,370 | 7.451 | 15 | 5 | 1 | 1 | - | 1 |
| Tex | 332 | 29 | 56 | 4 | 40,060 | 41.748 | 14 | 15 | - | 12 | - | 11 |
| MOUNTAIN | 201 | 6 | 20 | 1 | 16,033 | 17,249 | 33 | 22 | 7 | 2 | 1 | 11 |
| Mont | 4 | - | - | 1 | 458 | 474 | 3 | 2 | 1 | - | 1 | - |
| Idaho | 2 | - | - | - | 531 | 518 | 9 | 4 | - | - | - | - |
| Wyo | 4 | - | 2 | - | 357 | 417 | - | - | - | - | - | - |
| Colo | 96 | 4 | 3 | - | 4,193 | 5.137 | 4 | 8 | 1 | 2 | - | 3 |
| N Mex | 11 | - | 3 | - | 1.620 | 1,959 | 9 | 3 | 1 | - | - | $\because$ |
| Ariz | 50 | U | 8 | - | 5,082 | 5.113 | U | U | U | U | 11 | 5 |
| Utah | 10 | 1 | 3 | - | 696 | 749 | 5 | 2 | 3 | - | - | 1 |
| Nev | 24 | 1 | 1 | - | 3.096 | 2,882 | 3 | 3 | 1 | - | - | 2 |
| PACIFIC | 2,046 | 42 | 102 | 8 | 76,358 | 80.684 | 199 | 130 | 20 | 18 | 5 | 121 |
| Wash | 93 | 1 | 11 | - | 5,796 | 5,922 | 25 | 12 | 3 | 1 | - | 14 |
| Oreg | 41 | - | - | - | 3.171 | 3,997 | 35 | 9 | 4 | 1 | - | - |
| Calif | 1,873 | 32 | 89 | 8 | 64,770 | 67.744 | 139 | 106 | 13 | 16 | 5 | 84 |
| Alaska | 9 | - | 2 |  | 1.762 | 1.866 | . | 2 | . | . | - | - |
| Hawan | 30 | 9 | . | - | 859 | 1,155 | - | 1 | - | - | - | 23 |
| Guam | - | 1 | - | - | 113 | 128 | - | - | - | 1 | - | 1 |
| PR | 76 | - | 4 | - | 1,483 | 2,201 | 1 | - | - | - | - | 7 |
| VI | 3 | U | - | - | 139 | 316 | U | U | U | U | U | - |
| Pac Trust Terr | - | - | - | - | 276 | 574 | 3 | - | - | - | U | 31 |
| Amer Samoa | - | - | - | - | 30 | - | - | - | - | - | - | 2 |

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending
August 16, 1986 and August 17, 1985 (33rd Week)

| Reporting Area | Malaria | Measles (Rubeola) |  |  |  |  | Meningococcal Infections | Mumps |  | Pertussis |  |  | Rubella |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Indigenous |  | Imported * |  | Total <br> Cum. <br> 1985 |  |  |  |  |  |  |  |  |  |
|  | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | 1986 | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | 1986 | $\begin{aligned} & \text { Cum. } \\ & 1986 \end{aligned}$ |  | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | 1986 | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | 1986 | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | $\begin{aligned} & \text { Cum } \\ & 1985 \end{aligned}$ | 1986 | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | $\begin{aligned} & \text { Cum } \\ & 1985 \end{aligned}$ |
| UNITED STATES | 609 | 174 | 4.879 | 3 | 235 | 2,300 | 1.724 | 55 | 3,210 | 68 | 1.823 | 1,412 | 11 | 379 | 476 |
| NEW ENGLAND Maine | 31 | - | 74 | 1 | 8 | 123 | 122 | 4 | 53 | 3 | 100 | 78 | - | 9 | 12 |
| Maine | 1 | - | 10 38 | - | - | 1 | 23 |  | 13 | . | 2 | 5 | - | 9 | 12 |
| V | 1 | - | 38 | - | - | - | 6 15 | - | 13 | - | 46 | 29 | - | 1 | 2 |
| Mass | 16 | - | 23 | - | 6 | 115 | 15 | 3 | 3 9 | 1 | 3 | 3 |  | 1 |  |
| RI | 4 | - | 2 | $\cdots$ | 6 | 115 | 27 16 | 3 | 9 | 1 | 28 | 22 | $\bullet$ | 4 | 6 |
| Conn | 7 | - | 1 | $i^{+}$ | 2 | 7 | 16 35 | - | 9 19 | 1 | 4 17 | 12 | - | 2 | 4 |
| MID ATLANTIC | 75 | 68 | 1,559 | - | 21 | 196 | 273 | 4 | 133 | 6 | 129 | 95 |  |  |  |
| Upstate NY | 29 | 19 | 62 | - | 19 | 82 | 93 | 4 | +52 | 2 | +82 | 58 | - | 31 23 | 204 17 |
| NY City | 22 | 49 | 570 | - | 2 | 60 | 57 | - | 5 | 2 | 3 | 9 | - | + | 163 |
| $\begin{gathered} \mathrm{N} . \mathrm{J} \\ \mathrm{pa} \end{gathered}$ | 7 17 | - | 905 | - | - | 27 | 29 | 3 | 36 | 1 | 11 | 3 | - | 3 | 11 |
| Pa | 17 | - | 22 | - | - | 27 | 94 | 1 | 40 | 3 | 33 | 25 | - | 3 | 13 |
| EN CENTRAL | 39 | 14 | 949 | - | 16 | 510 | 234 | 33 | 2,185 | 12 | 240 | 263 | 2 | 34 |  |
| Ohio | 10 | - | - | - | 10 | 54 | 93 | 3 | $\begin{array}{r}2,185 \\ \hline\end{array}$ | 11 | 103 | 263 32 | 2 | 34 | 26 |
| Ind | 2 | 19 | 11 | - | - | 57 | 19 | - | 31 | 1 | 22 | 11 | - | 1 | 1 |
| III | 14 | 11 | 631 | - | 3 | 286 | 66 | 30 | 1.617 | - | 28 | 30 | 2 | 24 | 10 |
| Mich Wis | 12 | 3 | 53 | - | - | 54 | 52 | 3 | 1.617 248 | 1 | 28 | 29 | 2 | 24 7 | 10 14 |
| Wis | 1 | - | 254 | - | 3 | 59 | 4 | - | 190 | - | 63 | 161 | - | 2 | 1 |
| WN CENTRAL Minn | 22 | 51 | 321 | - | 17 | 11 | 83 | 1 | 82 | 5 | 150 | 94 |  | 10 |  |
| Minn | 5 | 51 | 45 132 | - | 4 | 6 | 16 | 1 | 1 | 1 | 43 | 28 | - | 10 | 19 2 |
| Mo | 10 | 51 | 132 25 | - | 6 | - | 11 | - | 21 | 2 | 13 | 5 | - | 1 | 1 |
| N Dak | 10 | - | 25 25 | - | 6 | 2 | 28 | - | 15 | 1 | 13 | 24 | - | 1 | 7 |
| S Dak | - | - | 25 | - | 1 | 2 | - | - | 3 | - | 4 | 9 | - | 1 | 2 |
| Nebr | 4 | - |  | - | - | - | 4 | - | 1 | - | 14 | 1 | - | - |  |
| Kans | 2 | - | 94 | - | 5 | 1 | 9 15 | 1 | 41 | 1 | 1 | 4 | - | 7 |  |
|  |  | - | 94 | - | 5 | 1 | 15 | 1 | 41 | - | 62 | 23 | - | 7 | 7 |
| S ATLANTIC Del | 76 | 3 | 504 | - | 53 | 268 | 321 | 4 | 152 | 13 | 578 |  |  |  |  |
| Del <br> Md | 12 | - | 1 | - | - | 268 | 2 | 4 | 152 | 13 | 578 222 | 269 | - | 10 | 49 |
| D. $C$ | 12 | 2 | 22 | - | 9 | 88 | 44 | - | 15 | - | 136 | 121 | - |  | 6 |
| Va | 18 | - | 35 | - | 24 | 8 | 4 | - | 32 | $\overline{-}$ |  | 12 | - |  | 6 |
| W Va | 18 4 | - | 35 | - | 24 | 24 | 53 | 3 | 32 | 3 | 30 | 8 | - | - | 2 |
| NC | 4 | - | 2 | - | 1 | 33 9 | 3 5 | - | 38 | 3 | 20 | 2 | - | - | 9 |
| SC | 5 | - | 274 | - | 1 | 9 | 55 | 1 | 14 | 3 | 41 | 15 | - |  |  |
| Ga | 7 | 1 | 274 79 | - | 14 | 3 8 | 29 49 | 1 | 12 | 2 | 13 | 1 | - | - | 3 |
| Fla | 24 | 1 | 89 | - | 14 3 | r 88 | 88 | - | 14 | 5 | 95 21 | 75 | - | 10 | 28 |
|  | 24 | - | 89 | - | 3 | 95 | 82 | - | 27 | - | 21 | 47 | - | 10 | 28 |
| ES CENTRAL | 16 | - | 56 | - | 8 |  | 96 | 1 |  |  |  |  |  |  |  |
| Ky. | 4 | - | 5 | - | 6 | 2 | 96 23 | 1 | 24 | 4 3 | 37 | 17 3 | 2 | 4 | 2 |
| Tenn | 1 | - | 54 | - | 1 | 1 | 35 |  | 15 | 3 | 12 | 3 | 2 | 4 | 2 |
| Ala | 7 | - |  | - | 1 | 1 | 35 27 | - | 15 2 | 1 | 12 | 5 6 | - | - |  |
| Miss | 4 | - | 2 | - | 1 | 1 | 11 | - | 1 | 1 | 20 | 6 3 | - | - |  |
| W.S CENTRAL | 58 | - | 585 | - | 34 | 419 | 150 | 1 | 147 | 3 | 135 | 211 |  | 55 |  |
| Ark | - | - | 276 | - | 2 | , | 21 | 1 | 7 | 3 | 135 | 2112 | - | 55 | 29 |
| La | 8 | - | 4 | - | 2 | 42 | 22 | - | 2 | 1 | 8 | 10 | - | - | 1 |
| Okla | 8 | - | 37 | - | 2 | 1 | 20 | N | N | 1 | 88 | 119 | - | - | 1 |
| Tex | 42 | - | 268 | - | 30 | 376 | 87 | 1 | 138 | 2 | 30 | 70 | - | 55 | 27 |
| mountain | 25 | - | 295 |  |  |  |  |  |  |  |  |  |  |  |  |
| Mont | - | - | 29 | $1+$ | 26 8 | 137 | 86 | 2 | 203 | 9 | 184 | 105 | 1 | 21 | 5 |
| Idaho | 1 | - | 1 | 1 | 8 | 135 | 8 3 | 2 | 5 6 | 1 | 8 33 | 5 | - | 2 |  |
| Wyo | - | - | 1 | - | - | 135 | 3 2 | 2 | 6 | - | 33 | 7 | - | - | 1 |
| Colo | 7 | - | 2 |  | 5 | 10 | 13 | - | 11 | 3 | 51 | $3{ }^{-}$ | - | - | - |
| N Mex | 4 | - | 32 | - | 7 | 10 5 | 13 | N | 11 | 3 | 51 | 32 | - | 1 | - |
| Ariz | 8 | U | 252 | U | 6 | 234 | 19 | N | N 167 | 1 | 17 | 11 | - | - | 2 |
| Utah | 2 | U | 2 | U | 6 | 234 | 19 | U | 167 | U | 46 | 24 | U | 2 | 1 |
| Nev . | 3 | - | 1 | - | - | - | +9 | - | 10 | 4 | 25 | 26 | 1 | 13 | - |
| PACIFIC | 267 | 38 | 536 | 1 | 52 |  |  |  |  |  |  |  |  |  |  |
| Wash | 21 | 33 | 158 | 1 | 25 | 248 | 359 | 5 | 231 | 13 | 270 | 280 | 6 | 205 | 130 |
| Oreg | 15 |  | 3 | - | 4 | 42 | 53 22 | N | 7 $N$ | 3 | 81 | 50 | 3 | 14 | 11 |
| Calif | 230 | 4 | 355 | 1 § | 22 | 184 | 271 | N 5 | ${ }^{\text {N }}$ | 10 | 10 | 29 | - | 1 | 1 |
| Alaska | - | 4 | 355 | 1 | 22 | 184 | 271 | 5 | 201 | 10 | 169 | 162 | 3 | 186 | 75 |
| Hawaii | 1 | 1 | 20 |  |  |  | 11 2 | - | $\begin{array}{r}6 \\ \hline\end{array}$ | - | 2 | 28 | - | - | 1 |
|  | 1 | 1 | 20 | - | 1 | 19 | 2 | - | 17 | - | 8 | 11 | - | 4 | 42 |
| Guam | 1 | - | 4 | - | 1 | 11 | 1 | - | 4 | - | - |  |  |  |  |
| PR. | 4 | - | 33 | - |  | 50 | 2 | - | 21 | 1 | 12 | 9 | - | 3 58 | 25 |
| V.I. | - | U |  | U |  | 10 | 2 | U | 13 | U | 12 | 9 | U | 58 | 25 |
| Pac Trust Terr | - | U | - | U |  | 1 | 1 | U | 13 | U | - | - | U | - | - |
| Amer Samoa | - | - | 2 | - | - | - | 1 | 1 | 7 4 | - | - | - | - | 2 | - |

[^3]N Not notifiable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending
August 16, 1986 and August 17, 1985 (33rd Week)

| Reporting Area | Syphilis (Civilian) (Primary \& Secondary) |  | Toxicshock Syndrome | Tuberculosis |  | Tularemia | Typhoid Fever | Typhus Fever (Tick-borne) (RMSF) | Rabies. Animal |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | $\begin{aligned} & \text { Cum } \\ & 1985 \end{aligned}$ | 1986 | $\begin{aligned} & \text { Curn } \\ & 1986 \end{aligned}$ | $\begin{aligned} & \text { Cum } \\ & 1985 \end{aligned}$ | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ | $\begin{aligned} & \text { Cum } \\ & 1986 \end{aligned}$ |
| UNITED STATES | 16,293 | 16,827 | 12 | 13.597 | 13,300 | 79 | 175 | $486+36$ | 3.483 |
| NEW ENGLAND | 303 | 348 | 1 | 418 | 450 | 1 | 10 | $8+$ | 3 |
| Maine | 15 | 9 | - | 31 | 35 | - | - | - | - |
| NH | 10 | 8 | - | 10 | 15 | - | - | - | - |
| Vt | 7 | 5 | - | 13 | 4 | - | - | - |  |
| Mass | 163 | 175 | 1 | 214 | 273 | 1 | 8 | 2 |  |
| RI | 16 | 11 | . | 27 | 35 | - | - | 31 | 1 |
| Conn | 92 | 140 | - | 123 | 88 | - | 2 | 32 | 2 |
| MID ATLANTIC | 2,355 | 2,196 | - | 2,788 | 2,442 | 1 | 14 | $16+1$ | 410 |
| Upstate NY | $99$ | 155 | - | 399 | 430 | - | 2 | 71 | 53 |
| NY City | 1.351 | 1.366 | - | 1,453 | 1.193 | - | 6 | 5 |  |
| N J | 422 | 428 | - | 484 | 336 | 1 | 5 | 1 | 14 |
| Pa | 483 | 247 | - | 452 | 483 | - | 1 | 3 | 343 |
| E N CENTRAL | 660 | 708 | 2 | 1.627 | 1.641 | - | 13 | $52+$ | 82 |
| Ohio | 85 | 93 | - | 287 | 301 | - | 2 | 502 | 9 |
| Ind | 77 | 63 | - | 174 | 201 | - | 2 | - | 13 |
| III | 351 | 362 | - | 713 | 711 | - | 2 | 1 | 23 |
| Mich | 113 | 148 | 2 | 375 | 325 | - | 5 | 1 | 16 |
| Wis | 34 | 42 | - | 78 | 103 | - | 2 | - | 21 |
| W N CENTRAL | 143 | 144 | - | 391 | 353 | 22 | 7 | 28 | 566 |
| Minn | 26 | 29 | - | 98 | 73 | - | 1 | 1 | 77 |
| lowa | 6 | 16 | - | 33 | 43 | 1 | - | 1 | 125 |
| Mo | 78 | 73 | - | 191 | 167 | 17 | 5 | 12 | 62 |
| N Dak | 2 | 2 | - | 6 | 6 | - | - | 1 | 124 |
| S Dak | 3 | 4 | - | 16 | 18 | 2 | - | 5 | 115 |
| Nebr | 11 | 7 | - | 7 | 13 | 1 | - | 4 | 22 |
| Kans | 17 | 13 | - | 40 | 33 | 1 | 1 | 4 | 41 |
| S ATLANTIC | 4,939 | 4,961 | 2 | 2,624 | 2,688 | 8 | 24 | $233+1$ | 820 |
| Del | 32 | 25 | - | 27 | 27 | - | 1 | 13 | - |
| Md | 282 | 284 | - | 192 | 242 | 2 | 6 | 263 | 405 |
| D C | 198 | 229 | - | 87 | 102 | - | 2 |  | 26 |
| Va | 239 | 190 | 1 | 219 | 239 | 2 | 5 | 43 \\| | 116 |
| W Va | 14 | 12 | 1 | 74 | 70 | - | 3 | 7 | 24 |
| NC | 327 | 428 | - | 366 | 339 | 1 | 3 | 794 | 6 |
| S C | 423 | 505 | - | 343 | 337 | - | - | 55 । | 38 |
| Ga | 956 | 859 | . | 398 | 432 | 3 | - | 21 | 124 |
| Fla | 2.468 | 2.429 | - | 918 | 900 | - | 4 | 1 | 81 |
| E S CENTRAL | 1.065 | 1,253 | - | 1,156 | 1.175 | 8 | 2 | $58+$ | 227 |
| $K y$ | 51 | 39 | - | 277 | 267 | 3 | - | 11 | 60 |
| Tenn | 380 | 388 | - | 331 | 343 | 4 | 1 | 251 | 97 |
| Ala | 352 | 406 | - | 365 | 357 | 1 | - | 142 | 68 |
| Miss | 282 | 420 | - | 183 | 208 | - | 1 | 8 | 2 |
| W S CENTRAL | 3.297 | 3,870 | 4 | 1,736 | 1.627 | 34 | 13 | $83+$ | 513 |
| Ark | 165 | 193 | - | 226 | 173 | 24 | - | 3 | 117 |
| La | 557 | 660 | - | 279 | 221 | 1 | 1 | - | 14 |
| Okla | 85 | 113 | 1 | 166 | 174 | 6 | 1 | 707 | 44 |
| Tex | 2,490 | 2,904 | 3 | 1,065 | 1.059 | 3 | 11 | 10 | 338 |
|  | 379 | 445 | 2 | 312 | 345 | 4 | 8 | $8+$ | 489 |
| Mont | 6 | 3 | 1 | 18 | 46 | 1 | 1 | 41 | 168 |
| Idaho | 9 | 4 | 1 | 12 | 15 | - | - | - | 2 |
| Wyo | - | 6 | - | - | 5 | - | - | 1 | 219 |
| Colo | 96 | 107 | - | 24 | 43 | - | 1 | 3 | 12 |
| N Mex | 46 | 81 | - | 67 | 65 | 1 | - | - | 5 |
| Ariz | 150 | 218 | U | 153 | 141 | - | 3 | - | 76 |
| Utah | 12 | 5 | U | 21 | 8 | 1 | 2 | - | 3 |
| Nev | 60 | 21 | - | 17 | 22 | 1 | 1 | - | 4 |
| PACIFIC | 3.152 | 2,902 | 1 | 2,545 | 2.579 | 1 | 84 | - | 373 |
| Wash | 99 | 79 | - | 121 | 144 | - | 3 | - | 5 |
| Oreg | 74 | 59 | - | 87 | 84 | - | 7 | - | - |
| Calif | 2,952 | 2,716 | 1 | 2,176 | 2,163 | - | 77 | - | 360 |
| Alaska | 2 | 2 | - | 37 | 68 | 1 | 1 | - | 8 |
| Hawaii | 25 | 46 | - | 124 | 120 | - | 3 | - | . |
| Guam PR | 1 564 | 497 | - | 33 198 | 30 226 | - | - | - | $3{ }^{-}$ |
| PR | 564 | 497 | u | 198 | 226 1 | - | 4 | - | 33 |
| Pac Trust Terr | 166 | 80 | U | 40 | 38 | - | 42 | - | - |
| Amer Samoa | - | - | - | 3 | 3 | - | 42 | - | - |

U Unavailable

TABLEIV. Deaths in 121 U.S. cities.* week ending August 16, 1986 (33rd Week)

| Reporting Area | All Causes, By Age (Years) |  |  |  |  |  | $\begin{aligned} & \text { P\& } 1^{\circ-} \\ & \text { Total } \end{aligned}$ | Reporting Area | AN Causes, By Age (Years) |  |  |  |  |  | Pslo ${ }^{-0}$ <br> Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\underset{\text { All }}{\text { Ages }}$ | $\geqslant 65$ | 45-64 | 25-44 | 1-24 | $<1$ |  |  | $\begin{gathered} \text { All } \\ \text { Ages } \end{gathered}$ | $\geqslant 65$ | 45-64 | 25-44 | 1-24 | < 1 |  |
| NEW ENGLAND | 604 | 402 | 124 | 35 | 17 | 26 | 38 | S ATLANTIC | 1.251 | 746 | 293 | 122 | 49 | 41 | 45 |
| Boston. Mass | 189 | 113 | 41 | 12 | 9 | 14 | 15 | Atlanta, Ga | 164 | 92 | 35 | 26 | 5 | 6 | 3 |
| Bridgeport. Conn | 29 | 23 | 3 | 1 | 1 | 1 | - | Baltimore, Md | 245 | 155 | 50 | 21 | 13 | 6 | 8 |
| Cambridge. Mass | 25 | 20 | 2 | 1 | - | 2 | 1 | Charlotte, N C | 78 | 43 | 24 | 6 | 4 | 1 | 5 |
| Fall River. Mass | 14 | 12 | 2 | - | - | - | - | Jacksonville, Fla. | 109 | 67 | 27 | 8 | 5 | 2 | 9 |
| Hartford Conn | 54 | 35 | 15 | 1 | 3 | - | 3 | Miami, Fla | 130 | 68 | 31 | 17 | 5 | 9 | 1 |
| Lowell. Mass | 27 | 19 | 5 | 2 | 1 | - | 1 | Norfolk, Va. | 58 | 27 | 18 | 9 | 3 | 1 | 3 |
| Lynn. Mass | 10 | 6 | 2 | 2 | - | - | - | Richmond, Va. | 67 | 38 | 22 | 3 | 1 | 3 | 4 |
| New Bedford, Mass | ss 20 | 19 | - | - | 1 | - | - | Savannah, Ga | 49 | 31 | 11 | 3 | 2 | 2 | 2 |
| New Haven, Conn | . 54 | 32 | 15 | 4 | 1 | 2 | 3 | St. Petersburg. Fla | 116 | 88 | 21 | 4 | 1 | 2 | 5 |
| Providence, RI. | 53 | 34 | 9 | 5 | . | 5 | 5 | Tampa, Fla | 57 | 34 | 11 | 7 | 2 | 3 | 3 |
| Somerville, Mass | 6 | 4 | 2 | - | - | - | 1 | Washington, D C. | 152 | 85 | 36 | 17 | 8 | 6 | 2 |
| Springfield. Mass | 45 | 30 | 11 | 2 | 1 | 1 | 6 | Wilmington. Del | 26 | 18 | 7 | 1 |  |  | 2 |
| Waterbury, Conn. | 28 | 20 | 5 | 3 | . |  |  |  |  |  |  |  |  |  |  |
| Worcester. Mass. | 50 | 35 | 12 | 2 | - | 1 | 3 | ES. CENTRAL | 768 | 475 | 179 | 53 | 23 | 37 | 37 |
|  |  |  |  |  |  |  |  | Birmingham. Ala | 100 | 50 | 36 | 7 | 5 | 2 |  |
| MID ATLANTIC 2 | 2,514 | 1.566 | 544 | 251 | 65 | 84 | 103 | Chattanooga. Tenn | 57 | 40 | 13 | 4 | . | - | 3 |
| Albany. N. Y | 52 | 26 | 16 | 3 | 2 | 5 | 1 | Knoxville. Tenn | 76 | 55 | 16 | 1 | - | 4 | 4 |
| Allentown. Pa | 22 | 18 | 4 | - | - | - | - | Louisville. Ky | 111 | 62 | 33 | 9 | 4 | 3 | 6 |
| Buffalo.NY | 99 | 60 | 26 | 5 | 1 | 7 | 4 | Memphis, Tenn | 214 | 135 | 41 | 12 | 5 | 20 | 13 |
| Camden. N J | 37 | 21 | 10 | 4 | 2 | - | - | Mobile. Ala | 58 | 33 | 14 | 6 | 2 | 3 | 2 |
| Elizabeth, NJ | 17 | 13 | 4 | - | - | - | - | Montgomery. Ala | 37 | 27 | 5 | 1 | 1 | 3 |  |
| Erie. Pa.t | 38 | 32 | 5 | - | - | 1 | 2 | Nashville, Tenn | 115 | 73 | 21 | 13 | 6 | 2 | 9 |
| Jersey City. N.J | 49 | 29 | 8 | 6 | - | 2 | - |  |  |  |  |  |  |  |  |
| N. Y City, NY 1 | 1,339 | 838 | 272 | 158 | 33 | 38 | 50 | WS CENTRAL | 1,384 | 790 | 312 | 154 | 75 | 51 | 48 |
| Newark, NJ | 110 | 42 | 29 | 28 | 8 | 3 | 7 | Austin, Tex. | 68 | 34 | 11 | 14 | 4 | 5 | 1 |
| Paterson, N J | 27 | 15 | 5 | 5 | 1 | 1 | 1 | Baton Rouge, La | 25 | 15 | 6 | 2 | 2 | - | 1 |
| Philadelphia. Pa | 294 | 186 | 63 | 21 | 10 | 14 | 14 | Corpus Christi. Tex | 45 | 23 | 5 | 10 | 5 | 2 | - |
| Pittsburgh. Pa $\dagger$ | 72 | 50 | 16 | 2 | 1 | 3 | 3 | Dallas. Tex | 194 | 102 | 45 | 24 | 12 | 11 | 7 |
| Reading. Pa | 37 | 25 | 11 | 1 | - | 3 | 9 | El Paso. Tex | 61 | 33 | 10 | 3 | 5 | 9 | 1 |
| Rochester, NY | 99 | 63 | 21 | 7 | 5 | 3 | 6 | Fort Worth. Tex | 103 | 59 | 23 | 8 | 5 | 8 | 2 |
| Schenectady. NY | 26 | 19 | 7 | - | - | . | 6 | Houston. Tex | 326 | 165 | 82 | 49 | 22 | 8 | 10 |
| Scranton. Pa $\dagger$ | 15 | 12 | 3 | - | - | - | - | Little Rock. Ark | 74 | 47 | 15 | 6 | 2 | 4 | 2 |
| Syracuse, N Y | 85 | 57 | 17 | 6 | 2 | 3 | 5 | New Orleans, La | 139 | 89 | 30 | 15 | 3 | 2 | - |
| Trenton, N J | 48 | 26 | 16 | 4 | - | 2 | 1 | San Antonio. Tex | 203 | 121 | 52 | 15 | 12 | 2 | 11 |
| Utica, NY | 21 | 16 | 3 | - | - | 2 | - | Shreveport, La. | 50 | 32 | 17 | - | 1 | - | 6 |
| Yonkers. NY | 27 | 18 | 8 | 1 | - | 2 | - | Tulsa, Okla | 96 | 70 | 16 | 8 | 2 | - | 7 |
| EN CENTRAL 2 | 2.215 | 1.403 | 481 | 180 | 70 | 81 | 99 | MOUNTAIN | 606 | 357 | 140 | 47 | 38 | 24 | 24 |
| Akron. Ohio | 52 | 36 | 6 | 8 | - | 2 | - | Albuquerque. N Mex | 130 | 76 | 21 | 10 | 19 | 4 | 4 |
| Canton. Ohio | 40 | 27 | 8 | 4 | - | 1 | 2 | Colo Springs, Colo | 37 | 20 | 9 | 3 | 4 | 1 | 3 |
| Chicago. III § | 564 | 362 | 125 | 45 | 10 | 22 | 16 | Denver, Colo | 93 | 51 | 25 | 8 | 1 | 8 | 2 |
| Cincinnati, Ohio | 89 | 60 | 20 | 6 | - | 3 | 7 | Las Vegas. Nev. | 89 | 47 | 29 | 6 | 3 | 4 | 6 |
| Cleveland. Ohio | 166 | 91 | 45 | 15 | 4 | 11 | 2 | Ogden. Utah | 16 | 10 | 2 | 1 | - | 3 | - |
| Columbus, Ohio | 128 | 75 | 35 | 10 | 2 | 6 | 3 | Phoenix, Ariz | 100 | 56 | 29 | 8 | 4 | 3 | 4 |
| Dayton. Ohio | 108 | 74 | 26 | 7 | - | 1 | 6 | Pueblo, Colo | 18 | 16 | 2 | - | - | - | 2 |
| Detroit, Mich | 256 | 124 | 65 | 39 | 19 | 9 | 12 | Salt Lake City. Utah | 45 | 30 | 5 | 3 | 7 | - | 1 |
| Evansville, Ind | 48 | 32 | 15 | - | - | 1 | 2 | Tucson. Ariz. | 78 | 51 | 18 | 8 | - | 1 | 2 |
| Fort Wayne, Ind | 47 | 28 | 11 | 5 | 2 | 1 |  |  |  |  |  |  |  |  |  |
| Gary, Ind | 11 | 8 |  | - | 2 | 1 | - | PACIFIC | 1,841 | 1,138 | 402 | 174 | 66 | 55 | 109 |
| Grand Rapids. Mich | ch. 66 | 49 | 10 | 3 | 3 | 1 | 5 | Berkeley. Calif | 21 | 13 | 4 | 1 | - | 3 | 4 |
| Indianapolis, Ind | 156 | 101 | 36 | 10 | 3 | 6 | 5 | Fresno, Calif | 87 | 52 | 14 | 8 | 6 | 7 | 11 |
| Madison. Wis | 42 | 22 | 6 | 4 | 9 | 1 | 6 | Glendale, Calif | 15 | 15 | - | - | - | - | 1 |
| Milwaukee. Wis | 120 | 87 | 18 | 7 | 5 | 3 | 8 | Honolulu, Hawaii | 42 | 31 | 8 | 2 | 1 | - | 4 |
| Peoria. III | 44 | 31 | 6 | 1 | 3 | 3 | 3 | Long Beach. Calif. | 74 | 47 | 18 | 4 | 2 | 3 | 7 |
| Rockford, III. | 50 | 36 | 7 | 5 | - | 2 | 4 | Los Angeles, Calif | 547 | 324 | 124 | 63 | 25 | 5 | 15 |
| South Bend, Ind | 59 | 38 | 13 | 3 | 4 | 1 | 6 | Oakland. Calif. | 53 | 29 | 14 | 3 | - | 7 | 2 |
| Toledo. Ohio | 119 | 84 | 24 | 4 | 4 | 3 | 14 | Pasadena. Calif | 28 | 18 | 5 | 3 | 1 | 1 | 1 |
| Youngstown. Ohio | - 50 | 38 | 5 | 4 | - | 3 |  | Portland, Oreg. | 116 | 77 | 27 | 6 | 4 | 2 | 5 |
|  |  |  |  |  |  |  |  | Sacramento, Calif | 121 | 78 | 25 | 10 | 5 | 3 | 14 |
| W N CENTRAL | 735 | 501 | 139 | 49 | 25 | 21 | 25 | San Diego, Calif. | 176 | 98 | 35 | 28 | 7 | 8 | 26 |
| Des Moines. lowa | 46 | 37 | 5 | 1 | 3 | - | 1 | San Francisco. Calif | 149 | 90 | 34 | 19 | 2 | 4 | 3 |
| Duluth, Minn. | 17 | 13 | 3 | 1 | - | - | 1 | San Jose. Calif | 156 | 96 | 42 | 12 | 6 | - | 10 |
| Kansas City, Kans. | 5. 40 | 25 | 9 | 2 | 2 | 2 | 1 | Seattie, Wash. | 160 | 106 | 34 | 8 | 5 | 7 |  |
| Kansas City. Mo. | 125 | 74 | 30 | 12 | 4 | 5 | 5 | Spokane, Wash | 59 | 42 | 12 | 2 | 2 | 1 | 4 |
| Lincoln, Nebr | 22 | 18 | 3 | 1 | - | $-$ | 2 | Tacoma. Wash. | 37 | 22 | 6 | 5 | - | 4 | 2 |
| Minneapolis. Minn | - 129 | 71 | 36 | 12 | 5 | 5 | 1 |  |  |  |  |  |  |  |  |
| Omaha, Nebr | 82 139 | 57 | 10 | 7 | 5 | 3 | 1 | TOTAL | 11.918 | 7.378 | 2,614 | 1,065 | 428 | 420 | 528 |
| St Louis. Mo | 139 | 106 | 22 | 6 | 1 | 4 | 7 |  |  |  |  |  |  |  |  |
| St Paul, Minn. | 77 | 59 | 10 | 2 | 4 | 2 | 3 |  |  |  |  |  |  |  |  |
| Wichita, Kans | 58 | 41 | 11 | 5 |  |  | 3 |  |  |  |  |  |  |  |  |

[^4]Measles - Continued
year involving vaccinated students. The large number of cases in preschoolers was due to two large outbreaks in New York City and New Jersey this year in which predominately preschool-aged children were involved, most of whom were unvaccinated (4). The smallest increase in incidence rate was in persons 15-19 years. There were no large outbreaks on college campuses this year as in 1985 (5).

The reasons for the increase in measles cases and the more widespread occurrence this year are not clear. Investigations of various outbreaks this year indicate no single common problem. Rather, a variety of reasons, including vaccine failures and unvaccinated preschoolers, have contributed to the large number of outbreaks.

As the measles elimination strategy is successfully implemented, the proportion of preventable cases should decrease. Since the percentage of preventable cases increased to $36.6 \%$ this year from $\mathbf{2 5 . 2}$ \% in 1985, further improvement in implementing existing recommendations for measles elimination are necessary (6). As in 1984 and 1985, preschool-aged children over 15 months of age comprised the group with the largest proportion of preventable cases. Greater efforts need to be directed at this age group.
References

1. CDC. Measles - United States, first 26 weeks, 1985. MMWR 1986;35:1-4.
2. CDC. Classification of measles cases and categorization of measles elimination programs. MMWR 1982;31:707-11.
3. CDC. Measles surveillance report no. 11, 1977-1981. Atlanta, Georgia: Centers for Disease Control, 1982.
4. CDC. Measles - New Jersey. MMWR 1986;35:213-5.
5. CDC. Measles on college campuses-United States, 1985. MMWR 1985;34:445-9.
6. ACIP. Measles prevention. MMWR 1982;31:217-24, 229-31.

## Epidemiologic Notes and Reports

## Occupational Fatality Following Exposure to Hydrogen Sulfide - Nebraska

Hydrogen sulfide $\left(\mathrm{H}_{2} \mathrm{~S}\right)$ is a potential hazard for workers in wastewater-treatment plants. Investigation of an occupational fatality resulting from exposure to $\mathrm{H}_{2} \mathrm{~S}$ in such a plant illustrates the hazards associated with this agent.

On September 3, 1983, a worker at a wastewater-treatment plant in Omaha, Nebraska, was found unconscious after he had gone to collect samples in the building where wastewater enters the plant. He died later that day from acute respiratory distress syndrome. A review of hospital records and the autopsy report showed the pattern of his fatal illness was compatible with exposure to $\mathrm{H}_{2} \mathrm{~S}$.

On September 6, engineers of the City of Omaha requested that the National Institute for Occupational Safety and Health (NIOSH) evaluate working conditions and help develop a health and safety plan for the plant (1). NIOSH investigators collected 40 personal-breathing-zone* and 26 long-term area air samples for $\mathrm{H}_{2} \mathrm{~S}$ in all areas of the plant. Concentrations of $\mathrm{H}_{2} \mathrm{~S}$ in the personal air samples ranged from none detected to 2.2 parts per million (ppm); results from the long-term area air samples ranged from none detected to 56.0 ppm .

[^5]Hydrogen Sulfide - Continued
The highest concentrations were found in the area near where the worker was apparently fatally overcome. Instantaneous area air samples for $\mathrm{H}_{2} \mathrm{~S}$ were also collected in this area. These concentrations ranged from 50 ppm to 200 ppm (the maximum reading on the instrument used) when one of the supply fans in the building malfunctioned.

During the week of October 17, $54(83 \%)$ of the 65 workers in the plant responded to a self-administered questionnaire. Forty-one ( $76 \%$ ) respondents indicated that, during the previous 2 weeks, they had experienced at least three of the symptoms known to be associated with $\mathrm{H}_{2} \mathrm{~S}$ exposure, most commonly cough ( $61 \%$ ), eye irritation ( $57 \%$ ), and nose irritation (54\%). However, no clear association between frequency of symptoms and estimated exposure was found.

The exact circumstances resulting in the worker's death may never be known. NIOSH investigators concluded that the factors contributing to the death included: (1) the summer temperature and the long transit time of the sewage entering the plant (resulting in high concentrations of dissolved $\mathrm{H}_{2} \mathrm{~S}$ ); (2) inappropriate design of the ventilation system; and (3) inadequate safety procedures for workers entering potentially dangerous areas. Based on these factors, NIOSH investigators provided recommendations to prevent any future fatal incidents.
Reported by NIOSH Region VII, Hazard Evaluations and Technical Assistance Br, Div of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, CDC.
Editorial Note: At room temperature, $\mathrm{H}_{2} \mathrm{~S}$ is a colorless gas and has a characteristic rottenegg odor. Although it has a rather low odor threshold ( 0.13 ppm ), it can cause olfactory fatigue at 100 ppm in 2-15 minutes. It is a rapid-acting systemic poison that causes respiratory paralysis with consequent asphyxia at high concentrations (1,000-2,000 ppm). Inhalation of high concentrations may cause coma after a single breath and may be rapidly fatal. Prolonged exposure to $\mathbf{2 5 0} \mathrm{ppm} \mathrm{H}_{2} \mathrm{~S}$ may cause pulmonary edema. Exposure to concentrations above 50 ppm for 1 hour may produce acute conjunctivitis with pain, lacrimation, and photophobia; in severe form, this may progress to keratoconjunctivitis and vesiculation of the corneal epithelium. Prolonged exposure to concentrations as low as $50 \mathrm{ppm}_{2} \mathrm{~S}$ may cause rhinitis, pharyngitis, bronchitis, and pneumonitis. In low concentrations, $\mathrm{H}_{2} \mathrm{~S}$ may cause headache, fatigue, irritability, insomnia, eye and respiratory irritation, and gastrointestinal disturbances; in somewhat higher concentrations, it affects the central nervous system, causing excitement and dizziness $(2,3)$.

The Occupational Safety and Health Administration (OSHA) has established a one-time, 10 -minute exposure limit of 50 ppm during a work shift (4). NIOSH recommends that the concentration for a 10-minute sample not exceed 10 ppm and also that the area be evacuated if the concentration of $\mathrm{H}_{2} \mathrm{~S}$ exceeds $50 \mathrm{ppm}(2)$.

The recommendations resulting from the Nebraska investigation provided a basis for preventing recurrence of the problem. The nature of the sewage (i.e., high concentration of $\mathrm{H}_{2} \mathrm{~S}$ ) entering the plant probably contributed to the death of this worker. The NIOSH investigators recommended the plant retain a consulting firm to evaluate adding an aeration system or chemicals along the sewage-transit line to prevent the growth of bacteria that cause the production of $\mathrm{H}_{2} \mathrm{~S}$. The average flow time through more than 25 miles of sewer pipe to the plant is approximately 8 hours. At all times, but especially during times of low flow and warmer water temperatures, the sewage becomes anaerobic, facilitating the production of $\mathrm{H}_{2} \mathrm{~S}$ by certain bacteria. The presence of $\mathrm{H}_{2} \mathrm{~S}$ had been a recurring problem at this plant. During the last stages of plant construction, a worker died in the main sewer that enters the plant; sewer gas was listed as the probable cause of death.

A second factor was the ventilation system in the mezzanine, bar screen, and wet-well areas. This system was designed to keep the entire area under positive pressure so the exhausted air could be filtered to avoid community odor problems. When the ventilation system failed during a power outage, an $\mathrm{H}_{2} \mathrm{~S}$ level of 200 ppm was measured at the doorway to the

## Hydrogen Sulfide - Continued

mezzanine area before the ventilation system was turned back on. Based on this figure, NIOSH investigators estimated the level of $\mathrm{H}_{2} \mathrm{~S}$ to be in the 1,000-2,000 ppm range in the area where the incident occurred. This is considerably above the value of 300 ppm that NIOSH considers immediately dangerous (5). As an experiment, NIOSH investigators and plant maintenance personnel reversed the fan in an effort to correct the airflow to the wet-well area; the $\mathrm{H}_{2} \mathrm{~S}$ concentration dropped from 125 ppm to 7 ppm in 2 hours. The NIOSH investigators recommended that all ventilation systems throughout the plant be evaluated and deficiencies be corrected.

A third probable contribution to the death was the lack of specific procedures to ensure safe entry into areas containing potentially hazardous gases. The implementation of carefully written and enforced procedures can help prevent the same potentially hazardous conditions that existed for this fatality.

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International Notes

## Quarantine Measures

Six countries have revised their vaccination requirements, effective August 1, 1986. The following changes should be made in the booklet "Health Information for International Travel, 1986."

ANGOLA
Delete information on cholera on page 15. Change yellow fever code to ll > 1 yr. on page 15. Delete Angola from the yellow fever section under Requirements for Direct Travel from the United States on page 13.
BARBADOS
Delete yellow fever country list on pages 18 and 19. Code III $>1$ yr. remains valid.
GABON
Change yellow fever code to $\mathrm{I}>1 \mathrm{yr}$. on page 29. Add Gabon to the yellow fever section under Requirements for Direct Travel from the United States on page 13.

## MALI

Delete information on cholera on page 40.
NIGERIA
Delete information on cholera on page 44. Change yellow fever code to ll $>1 \mathrm{yr}$. on page 44.
Delete Nigeria from the yellow fever section under Requirements for Direct Travel from the United States on page 13.
TANZANIA, UNITED REPUBLIC OF
Delete information on cholera pages 13 and 53.

FIGURE I. Reported measles cases - United States, weeks 29-30, 1986


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The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: ATTN: Editor, Morbidity and Mortality Weekly Report, Centers for Disease Control, Atlanta, Georgia 30333.

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[^0]:    *Fever (38.3 C [101 F] or higher, if measured), generalized rash of 3 days or longer duration, and at least one of the following: cough, coryza, conjunctivitis.

[^1]:    -Provisional data.
    ${ }^{\dagger}$ Per 100,000 population.

[^2]:    -Provisional data.
    ${ }^{+}$Medical-nine; religious-41; philosophic-23.

[^3]:    For measies only. imported cases includes both out-of-state and international importations

[^4]:    - Mortality data in this table are voluntarily reported from 121 cities in the United States. most of which have populations of 100.000 or more.A death is reported by the place of its occurrence and by the week that the death certificate was filed Fetal deaths are not included
    - Pneumonia and influenza
    $\dagger$ Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week Complete counts will be available in 4 to 6 weeks.
    $\dagger \dagger$ Total includes unknown ages.
    § Data not available. Figures are estimates based on average of past 4 weeks

[^5]:    -Personal air samples are collected in the worker's breathing zone. Long-term area air samples are collected in the work area over an entire work shift. Instantaneous air samples are measured by a direct reading instrument.

