

**Table 11.4 Methane Emissions, 1980-2009**  
(Million Metric Tons of Methane)

| Year | Energy Sources |                                  |                                |                                |                                    |                    | Waste Management |                                    |                    | Agricultural Sources              |                           |                  |                      |                    | Industrial Processes <sup>9</sup> | Total <sup>5</sup> |
|------|----------------|----------------------------------|--------------------------------|--------------------------------|------------------------------------|--------------------|------------------|------------------------------------|--------------------|-----------------------------------|---------------------------|------------------|----------------------|--------------------|-----------------------------------|--------------------|
|      | Coal Mining    | Natural Gas Systems <sup>1</sup> | Petroleum Systems <sup>2</sup> | Mobile Combustion <sup>3</sup> | Stationary Combustion <sup>4</sup> | Total <sup>5</sup> | Landfills        | Waste-water Treatment <sup>6</sup> | Total <sup>5</sup> | Enteric Fermentation <sup>7</sup> | Animal Waste <sup>8</sup> | Rice Cultivation | Crop Residue Burning | Total <sup>5</sup> |                                   |                    |
| 1980 | 3.06           | R4.42                            | NA                             | 0.28                           | 0.45                               | R8.20              | 10.52            | 0.52                               | 11.04              | 5.47                              | R2.87                     | 0.48             | 0.04                 | R8.86              | 0.17                              | R28.27             |
| 1981 | 2.81           | R5.02                            | NA                             | .27                            | .45                                | R8.55              | 10.69            | .53                                | 11.22              | 5.56                              | R2.73                     | .54              | .05                  | R8.88              | .18                               | R28.82             |
| 1982 | 3.23           | R5.04                            | NA                             | .27                            | .46                                | R9.01              | R10.63           | .54                                | 11.17              | 5.50                              | R2.63                     | .47              | .05                  | R8.65              | .13                               | R28.97             |
| 1983 | 3.02           | R5.00                            | NA                             | .27                            | .46                                | R8.76              | 10.67            | .54                                | 11.21              | 5.46                              | R2.68                     | .31              | R.04                 | R8.49              | .15                               | R28.62             |
| 1984 | 3.61           | R5.11                            | NA                             | .27                            | .48                                | R9.46              | 10.68            | .66                                | R11.33             | 5.33                              | R2.60                     | .40              | R.05                 | R8.38              | R.16                              | R29.34             |
| 1985 | 3.89           | R5.16                            | NA                             | .26                            | .48                                | R9.79              | 10.65            | .67                                | 11.32              | 5.27                              | R2.56                     | .36              | R.05                 | R8.23              | R.15                              | R29.49             |
| 1986 | 3.73           | R5.04                            | NA                             | .26                            | R.46                               | R9.48              | 10.53            | .67                                | R11.20             | 5.13                              | R2.51                     | .34              | .04                  | R8.02              | .16                               | R28.87             |
| 1987 | 4.01           | R5.14                            | NA                             | .25                            | .43                                | R9.85              | 10.63            | .68                                | 11.31              | 5.08                              | R2.56                     | .33              | .04                  | R8.02              | .17                               | R29.34             |
| 1988 | 3.94           | R5.29                            | NA                             | .25                            | .46                                | R9.95              | R10.51           | .69                                | R11.20             | 5.10                              | R2.60                     | .41              | R.05                 | R8.14              | R.18                              | R29.47             |
| 1989 | 3.96           | R5.46                            | NA                             | .25                            | .48                                | R10.15             | R10.43           | .70                                | 11.13              | 5.08                              | R1.68                     | .38              | R.05                 | R7.18              | .18                               | R28.64             |
| 1990 | R4.07          | R5.78                            | 1.30                           | R.22                           | .37                                | R11.72             | R10.31           | .91                                | R11.23             | R5.58                             | R1.59                     | .40              | R.05                 | R7.62              | .18                               | R30.75             |
| 1991 | 4.09           | R6.00                            | 1.31                           | R.21                           | .37                                | R11.98             | R10.00           | .93                                | R10.93             | R5.61                             | R1.64                     | .40              | R.05                 | R7.69              | .19                               | R30.78             |
| 1992 | 4.05           | R6.07                            | 1.26                           | R.20                           | .38                                | R11.97             | R9.84            | .95                                | R10.79             | R5.77                             | R1.68                     | .45              | R.05                 | R7.95              | .19                               | R30.90             |
| 1993 | R3.29          | R6.03                            | 1.21                           | R.20                           | .36                                | 11.08              | R9.58            | .96                                | R10.54             | R5.77                             | R1.73                     | .41              | .04                  | R7.96              | .20                               | R29.77             |
| 1994 | R3.35          | R6.08                            | 1.17                           | R.19                           | .35                                | R11.15             | R9.25            | .98                                | R10.23             | R5.90                             | R1.81                     | .48              | .05                  | R8.23              | .21                               | R29.82             |
| 1995 | R3.31          | R6.17                            | R1.16                          | R.20                           | .35                                | R11.20             | R8.62            | 1.00                               | R9.61              | R5.96                             | R1.84                     | .44              | R.05                 | R8.28              | .22                               | R29.31             |
| 1996 | R3.30          | R6.20                            | 1.14                           | R.20                           | .36                                | R11.20             | R8.19            | 1.01                               | R9.19              | R5.95                             | R1.84                     | .41              | R.05                 | R8.25              | R.22                              | R28.87             |
| 1997 | R3.28          | R6.47                            | 1.14                           | R.20                           | .33                                | R11.42             | R7.45            | 1.02                               | R8.47              | R5.72                             | R1.91                     | .45              | .05                  | R8.13              | R.23                              | R28.26             |
| 1998 | R3.29          | R6.45                            | 1.11                           | R.19                           | .30                                | R11.34             | R6.80            | 1.03                               | R7.83              | R5.65                             | R1.97                     | .47              | .05                  | R8.14              | R.23                              | R27.54             |
| 1999 | 3.11           | R6.47                            | 1.04                           | R.18                           | .31                                | R11.11             | R6.21            | 1.05                               | R7.25              | R5.64                             | R1.97                     | .50              | .05                  | R8.16              | R.24                              | R26.76             |
| 2000 | R2.98          | R6.77                            | 1.03                           | R.17                           | .33                                | R11.27             | R5.93            | 1.05                               | R6.98              | R5.60                             | R1.96                     | .44              | .05                  | R8.05              | R.22                              | R26.53             |
| 2001 | R2.97          | R6.59                            | 1.03                           | R.16                           | .30                                | R11.05             | R5.65            | 1.05                               | R6.70              | R5.53                             | R1.98                     | .47              | .05                  | R8.02              | .20                               | R25.97             |
| 2002 | 2.79           | R6.90                            | 1.02                           | R.15                           | .30                                | R11.16             | R5.58            | 1.06                               | R6.64              | R5.54                             | R1.99                     | .44              | R.05                 | R8.03              | .21                               | R26.03             |
| 2003 | 2.79           | R6.86                            | 1.01                           | R.14                           | .31                                | R11.11             | R5.97            | 1.06                               | R7.03              | R5.61                             | R2.00                     | .43              | .05                  | R8.08              | R.20                              | R26.43             |
| 2004 | R2.86          | R6.93                            | .96                            | R.14                           | R.31                               | R11.20             | R5.80            | 1.07                               | R6.88              | R5.62                             | R2.02                     | .47              | .05                  | R8.16              | R.22                              | R26.46             |
| 2005 | 2.81           | R6.91                            | .92                            | R.13                           | .32                                | R11.08             | R6.02            | 1.08                               | R7.09              | R5.71                             | R2.18                     | .46              | .05                  | R8.40              | .20                               | R26.77             |
| 2006 | R2.86          | R7.00                            | .91                            | R.12                           | .30                                | R11.19             | R6.18            | 1.10                               | R7.27              | R5.77                             | R2.25                     | .39              | .05                  | R8.47              | R.20                              | R27.14             |
| 2007 | 2.84           | R7.26                            | .90                            | R.12                           | .31                                | R11.43             | R6.40            | 1.11                               | R7.51              | R5.80                             | R2.24                     | .39              | .05                  | R8.49              | .21                               | R27.64             |
| 2008 | 3.28           | R7.37                            | .88                            | R.11                           | R.33                               | R11.97             | R6.90            | R1.12                              | R8.02              | R5.93                             | R2.37                     | R.43             | .05                  | R8.79              | R.18                              | R28.97             |
| 2009 | 3.44           | 7.32                             | .94                            | .11                            | .31                                | 12.12              | 7.19             | 1.12                               | 8.31               | 5.80                              | 2.33                      | .45              | .06                  | 8.64               | .17                               | 29.24              |

<sup>1</sup> Natural gas production, processing, and distribution; processing is not included in 1980 and is incompletely covered in 1981-1989.

<sup>2</sup> Petroleum production, refining, and distribution.

<sup>3</sup> Emissions from passenger cars, trucks, buses, motorcycles, and other transport.

<sup>4</sup> Consumption of coal, petroleum, natural gas, and wood for heat or electricity.

<sup>5</sup> See notes on components for specific coverage, which is inconsistent prior to 1990 in some cases.

<sup>6</sup> 1980-1983, domestic wastewater only; 1984 forward, industrial and domestic wastewater.

<sup>7</sup> Methane emitted as a product of digestion in animals such as cattle, sheep, goats, and swine.

<sup>8</sup> Estimation methods for 1990 forward reflect a shift in waste management away from liquid systems to dry-lot systems, thus lowering emissions.

<sup>9</sup> Chemical production, and iron and steel production.

R=Revised. NA=Not available.

Notes: • Emissions are from anthropogenic sources. "Anthropogenic" means produced as the result of

human activities, including emissions from agricultural activity and domestic livestock. Emissions from natural sources, such as wetlands and wild animals, are not included. • Under certain conditions, methane may be produced via anaerobic decomposition of organic materials in landfills, animal wastes, and rice paddies. • Because of the continuing goal to improve estimation methods for greenhouse gases, data are frequently revised on an annual basis in keeping with the latest findings of the international scientific community. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.gov/environment/>.

Sources: U.S. Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 2009* (March 2011), Tables 17-21; and EIA estimates based on the Intergovernmental Panel on Climate Change's *Guidelines for National Greenhouse Gas Inventories* (2006 and revised 1996 guidelines)—see <http://www.ipcc-nggip.iges.or.jp/public/gl/invs6.html>; and the U.S. Environmental Protection Agency's *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2008* (April 2010)—see <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>.