This paper studies the interaction between taxation and firms' voluntary overcompliance with environmental regulation. For this purpose, a duopoly model of vertical differentiation with fixed cost of environmental quality is used. Both the cases of partial and full market coverage are considered. The main results of this study are the following. First, an emission tax always increases overcompliance. An ad valorem tax always decreases overcompliance by the firm producing the high environmental quality product. An ad valorem tax may increase or decrease overcompliance by the firm producing the low environmental quality product: in the cases of partial coverage and full coverage with a corner solution overcompliance decreases, while in the case of full coverage with an interior solution overcompliance increases. Second, an emission tax always decreases the degree of product differentiation. An ad valorem tax either decreases or leaves unaffected the degree of differentiation, depending on whether the market is fully or partially covered. Third, an ad valorem tax always leads to an increase in pollution. An emission tax may increase or decrease pollution. When the market is fully covered, pollution always decreases with an emission tax. When the market is partially covered, an emission tax reduces the level of emissions per unit of production, but simultaneously increases output. Nevertheless, pollution may decrease with an emission tax under partial coverage, provided that the investment in pollution abatement by the high quality firm is large enough. Fourth, social welfare increases with an emission tax and decreases with an ad valorem tax when the market is partially covered and if the degree of product differentiation is high enough. Under full coverage, whether an emission and an ad valorem tax increase welfare depends on the degree of consumers' heterogeneity. When the degree of consumer heterogeneity is high enough, an emission tax increases welfare while an ad valorem tax increases welfare. When the degree of consumer heterogeneity is low, the opposite is true: an emission tax decreases welfare while an ad valorem tax increases it.