

2. Using any pictorial or other visual means of communication with or without an accompanying verbal text which directly or by implication creates a misleading impression in the minds of viewers as to the true state of material facts which are the subject of said pictures or other visual means of communication unless the respondent can establish it neither knew nor had reason to know nor upon reasonable inquiry could have known the true facts.

3. Misrepresenting in any manner or by any means any characteristic, property, quality, or the result of the use of any gasoline or gasoline additive product unless the respondent can establish it neither knew nor had reason to know nor upon reasonable inquiry could have known that such representations are false.

*It is further ordered,* That Subparagraphs 1, 3, 4, 5, 7, 8, 9, 10(b), 10(c) and 11 of Paragraphs Five and Six of the complaint be, and they hereby are, dismissed.

*It is further ordered,* That the respondent corporations shall forthwith distribute a copy of this order to each of their operating divisions.

*It is further ordered,* That respondents herein shall notify the Commission at least thirty (30) days prior to any proposed change in any of the corporate respondents such as dissolution, assignment, or sale resulting in the emergence of a successor corporation, the creation or dissolution of subsidiaries or any other change in the corporation which may affect compliance obligations arising out of the order.

*It is further ordered,* That respondents shall, within sixty (60) days after service of the order upon them, file with the Commission a written report, signed by the respondents, setting forth in detail the manner and form of their compliance with the order to cease and desist.

Commissioners Hanford and Nye did not participate since oral argument was heard prior to their assumption of Office.

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IN THE MATTER OF

CROWN CENTRAL PETROLEUM CORPORATION

ORDER, OPINION, ETC., IN REGARD TO ALLEGED VIOLATION OF THE  
FEDERAL TRADE COMMISSION ACT

*Docket 8851. Complaint, July 14, 1971 - Decision, Nov. 26, 1974\**

Order requiring a Baltimore, Md., seller and distributor of gasoline and other petroleum products, among other things to cease misrepresenting that its gasoline additive will produce pollution-free exhaust.

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\*Petition for review filed Nov. 26, 1974, D. C. Cir.

Complaint

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*Appearances*

For the Commission: *Fauster J. Vittone, Jean F. Greene and Michael A. Pearlman.*

For the respondent: *James H. Kelley, Leonard H. Tokus, Bergson, Borkland, Margolis & Adler, Wash., D.C. Morton A. Sacks, Cable, McDaniel, Bowie & Bond, Baltimore, Md.*

## COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, and by virtue of the authority vested in it by said Act, the Federal Trade Commission, having reason to believe that Crown Central Petroleum Corporation, a corporation, hereinafter referred to as respondent, has violated the provisions of said Act, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues its complaint stating its charges in that respect as follows:

PARAGRAPH 1. Respondent Crown Central Petroleum Corporation is a corporation organized, existing and doing business under and by virtue of the laws of the State of Maryland, with its principal office and place of business located at One North Charles, Baltimore, Md.

PAR. 2. Respondent Crown Central Petroleum Corporation is now, and for some time past has been, engaged in the sale and distribution of gasoline and other petroleum products under the trade name Crown and other names to the public.

In 1969 respondent Crown Central Petroleum Corporation's sales were in excess of \$90,000,000.

PAR. 3. Respondent Crown Central Petroleum Corporation in the course and conduct of its business as aforesaid now causes and for some time past has caused its said products, when sold, to be shipped from its places of business in the States of Maryland and Texas to purchasers thereof located in various other States of the United States, and maintains, and at all times mentioned herein has maintained, a substantial course of trade in said products in commerce, as "commerce" is defined in the Federal Trade Commission Act.

PAR. 4. In the course and conduct of its business as aforesaid, and for the purpose of inducing the purchase of Crown gasolines containing CA-101, a gasoline additive, the respondent has made, and is now making, numerous statements and representations in advertisements published in newspapers and in other promotional material, and by means of radio broadcasts.

Typical of the statements and representations contained in said advertisements, but not all inclusive, are the following:

NOW: NEW CLEAN-AIR GASOLINE  
WITH FORMULA CA-101

*Dramatically reduces exhaust emissions*

Crown Premium 100 PLUS and Super Regular Gasoline now contain Formula CA-101. This remarkable new gasoline additive dramatically reduces exhaust emissions from your engine. Crown with Formula CA-101 *reduces unburned hydrocarbons by as much as 66 percent\*, deadly carbon monoxide 41 percent\**. Clearly, this is a step toward cleaner air. Crown with Formula CA-101 works well in old cars and keeps new cars clean. Every car on the road should be using it.

*Gives better mileage*

Crown with CA-101 is both new and different. You get better gasoline mileage. It cleans your engine and keeps it clean. Your engine performs better, more efficiently. It breathes easier. And so do you. Crown, with Formula CA-101 burns cleaner, more completely. You use less gasoline. As a result, you get more miles per gallon, more miles per dollar.

NOW: NEW CLEAN-AIR GASOLINE WITH FORMULA CA-101

**\*\*REDUCES EXHAUST EMISSIONS \* \* \*** unburned hydrocarbons up to 66%,  
deadly carbon monoxide up to 41%.

**\*\*CLEANS ENGINES**

**\*\*GIVES BETTER MILEAGE\* \* \***

Breathe A Little Easier With Formula CA-101

\*Source: "A Study on the Effects \* \* \* of Exhaust Emissions" DuPont Chemical Company.

PAR. 5. By and through the use of the statements and representations, set out in Paragraph Four above, and others of similar import not specifically set out herein, respondent has represented and is now representing that:

1. CA-101 additive produces pollution-free motor vehicle exhaust;
2. CA-101 additive will significantly reduce air pollution;
3. CA-101 additive will significantly reduce emissions of carbon monoxide and unburned hydrocarbons from every motor vehicle in which it is used;

4. Respondent had tests, or had conducted tests, or had had others conduct tests which proved or substantiated representations made for CA-101 additive in its advertisements before publication or dissemination of such advertisements; these representations include, but are not limited to, the following:

- (a) CA-101 additive produces pollution-free motor vehicle exhaust;
- (b) CA-101 additive will significantly reduce air pollution; and will significantly reduce emissions of carbon monoxide and unburned hydrocarbons from every motor vehicle in which it is used;

- (c) Every purchaser of Crown gasoline containing CA-101 additive will obtain substantially better mileage by or through the use of such

gasolines that can be obtained by or through the use of any other commercially available gasoline.

5. CA-101 additive will clean or keep clean all engines and engine components.

PAR. 6. In truth and in fact:

1. CA-101 additive does not produce pollution-free motor vehicle exhaust;

2. CA-101 will not significantly reduce air pollution;

3. CA-101 additive will not significantly reduce emissions or carbon monoxide and unburned hydrocarbons from every motor vehicle in which it is used;

4. Respondent did not have tests, or conduct tests, or have others conduct tests which proved or substantiated representations made for CA-101 additive in its advertisements before publication or dissemination of such advertisements; these representations include, but are not limited to, the following:

(a) CA-101 additive produces pollution-free motor vehicle exhaust;

(b) CA-101 additive will significantly reduce air pollution; and will significantly reduce emissions of carbon monoxide and unburned hydrocarbons from every motor vehicle in which it is used;

(c) Every purchaser of Crown gasolines containing CA-101 additive will obtain substantially better mileage by or through the use of such gasolines than can be obtained by or through the use of any other commercially available gasoline;

5. CA-101 additive will not clean or keep clean all engines and engine components.

Therefore, the aforesaid statements, representations, and demonstrations set forth in Paragraphs Four and Five were and are false, misleading, and deceptive.

PAR. 7. In the course and conduct of its business as aforesaid, and at all times mentioned herein, respondent Crown Central Petroleum Corporation has been and is now in substantial competition in commerce with corporations, firms and individuals in the sale of gasolines and other petroleum products of the same general kind and nature as that sold by respondent.

PAR. 8. The use by respondent of the aforesaid false, misleading and deceptive statements and representations has had, and now has, the capacity and tendency to mislead members of the purchasing public into the erroneous and mistaken belief that said statements, representations and demonstrations were and are true and into the purchase of substan-

tial quantities of Crown gasolines with CA-101 by reason of said erroneous and mistaken belief.

PAR. 9. The aforesaid acts and practices of respondent, as herein alleged, were and are all to the prejudice and injury of the public and of respondent's competitors and constituted, and now constitute, unfair methods of competition in commerce and unfair and deceptive acts and practices in commerce in violation of Section 5 of the Federal Trade Commission Act.

INITIAL DECISION BY THEODOR P. VON BRAND, ADMINISTRATIVE  
LAW JUDGE  
MAY 25, 1973

PRELIMINARY STATEMENT

On July 14, 1971, the Federal Trade Commission issued its complaint against Crown Central Petroleum Corporation (Crown), charging it with having violated Section 5 of the Federal Trade Commission Act.

Crown, a marketer and distributor of gasoline and other petroleum products, according to the complaint, misrepresented the performance of its gasolines containing CA-101, a detergent additive. Specifically, the complaint charges that respondent falsely represented that:

CA-101 produces pollution free motor vehicle exhaust.

CA-101 will significantly reduce air pollution.

CA-101 will significantly reduce emissions of carbon monoxide and unburned hydrocarbons from every motor vehicle in which it is used.

CA-101 will clean or keep clean all engines and engine components.

Crown had tests or conducted tests or had others conduct tests which proved or substantiated certain of the representations made for CA-101 in its advertisements before publication or dissemination thereof.

The product claims whose propriety is under consideration here are based essentially on the contention that the additive effectively reduces certain automobile emissions by preventing, removing, or reducing deposits in the carburetor and the engine's intake system and thus keeping in effect or restoring the optimum air fuel ratio.

Prehearing conferences were held on Oct. 22, 1971, Jan. 3, 1972, Mar. 24, 1972, Apr. 7, 1972, June 27, 1972 and Aug. 4, 1972. Evidentiary hearings commenced on Sept. 25, 1972, and the record was closed on Nov. 17, 1972. Oral argument on proposed findings was heard on Apr. 20, 1973. The Commission, at complaint counsel's request, extended the time for the filing of proposed findings and replies fixing June 22, 1973 as the due date of the initial decision.

This matter is now before the undersigned for final consideration of the complaint, answer, evidence, and the proposed findings of fact, conclusions, and briefs filed by counsel for the respondent and complaint counsel. Consideration has been given to the proposed findings of fact, conclusions and briefs filed by both parties, and all proposed findings of fact and conclusions not herein specifically found or concluded are rejected; and the undersigned, having considered the entire record herein, makes the following findings of fact, conclusions drawn therefrom, and issues the following order:

#### FINDINGS OF FACT<sup>1</sup>

##### I. The Respondent

1. Crown Central Petroleum Corporation is a corporation organized, existing and doing business under and by virtue of the laws of the State of Maryland, with its principal office and place of business located at One North Charles, Baltimore, Md. (Admitted in Answer)

2. Crown is now, and for sometime past has been, engaged in the sale and distribution of gasoline under the trade name Crown and other names to the public. In 1969, its sales were in excess of \$90,000,000. (Admitted in Answer)

3. Crown, in the course and conduct of its business, now causes, and for sometime past has caused its products, when sold, to be shipped from its places of business in the States of Maryland and Texas to purchasers thereof located in various other States of the United States, and maintains, and at all times mentioned herein has maintained, a substantial course of trade in said products in commerce, as "commerce" is defined in the Federal Trade Commission Act. It is in competition in commerce with other corporations, firms, and individuals in the sale of petroleum products. (Admitted in Answer)

4. Crown, at the time of the advertisements challenged in this proceeding, had 30 stations in the Baltimore-Washington area and 17 stations in Virginia (CX 108, 108A). In 1970, its market share of gasoline sales in Maryland and Virginia was 2.65 percent and 1.42 percent, respectively (CX 120A-B).

<sup>1</sup> References to the record are made in parenthesis, and certain abbreviations are used as follows:

CPF - Proposed findings of complaint counsel

RPF - Proposed findings of counsel for respondent

CX - Commission Exhibit

RX - Respondent's Exhibit

Tr. - Transcript page

CRPF - Complaint counsel's reply to respondent's findings

RRPF - Respondent's reply to complaint counsel's findings

Reference to the proposed findings of counsel are to page numbers, preceded by one of the abbreviations listed above. References to the testimony sometimes cite the name of the witness and the transcript page number without the abbreviation.

## II. Air Pollution

5. Air pollution is the presence in the outdoor atmosphere of one or more substances in concentrations and over periods of time which have or tend to have a detrimental effect on human health, or adverse effect on vegetation, agricultural animals; reduce visibility, or interfere with reasonable enjoyment of one's property (Schueneman 448).

Among the principal air contaminants are sulfur dioxide, arising primarily from the combustion of sulfur containing fuels; carbon monoxide which arises primarily from motor vehicle exhaust and to some extent from industrial processes; nitrogen dioxide which arises from photochemical reactions in the atmosphere involving hydrocarbons and nitric oxide; nitric oxide arising primarily from the combustion of any fuel; and photochemical oxidants which are produced in the atmosphere through reaction between nitric oxides and hydrocarbons in the presence of strong sunlight. Another principal class of contaminants is particulate matter, which are particles in the atmosphere made up of dust, fumes, metallurgical fumes, and chemical particles. In addition, air pollution is also comprised of such contaminants as lead, asbestos, beryllium, mercury and fluorides (Schueneman 448-49).

6. Over the past 30 years, the major pollutants with the exception of particulates have increased significantly. Such increases may be ascribed to the major increase in population and industrialization marking this period and the short time in which serious control effects have been undertaken (RX 19, p. 6).

Weight of Emissions of Air Pollutants, 1940-1970 (Tons X 10 <sup>6</sup> )					
Year	SO <sub>x</sub>	CO	Particulates	HC	NO <sub>x</sub>
1940	22	85	27	19	7
1950	24	103	26	26	10
1960	23	128	25	32	14
1968	31	150	26	35	21
1969	34	154	27	35	22
1970	34	147	25	35	23

Source: EPA, "Nationwide Air Pollutant Emission Trends, 1940-70," 1972, forthcoming. (RX 19, p. 6)

The abbreviations stand for the following: SO<sub>x</sub> - sulfur oxides; CO - carbon monoxide; HC - hydrocarbons; NO<sub>x</sub> - nitrogen oxides.

Broken down by source, pollutants on a weight basis were set forth as follows in preliminary federal estimates for 1970:

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Estimated Emissions of Air Pollutants by Weight, Nationwide, 1970 (Preliminary Data)  
(In millions of tons per year)

Source	CO	Particulates	SO <sub>x</sub>	HC	NO <sub>x</sub>
Transportation	111.0	0.7	1.0	19.5	11.7
Fuel combustion in stationary sources	.8	6.8	26.5	.6	10.0
Industrial processes	11.4	13.1	6.0	5.5	.2
Solid waste disposal	7.2	1.4	.1	2.0	.4
Miscellaneous	16.8	3.4	.3	7.1	.4
Total	147.2	25.4	33.9	34.7	22.7
Percent change 1969-70	-4.5	-7.4	0	0	+4.5

Source: Environmental Protection Agency

(RX 19, p. 6)

7. The significance of air pollutants should not be evaluated solely in terms of their aggregate weight. Pollutants are of concern because of their effect on human health, damage to vegetation, livestock and structures and effects on atmospheric processes. For example, other things being equal, a pound of sulfur oxides is a greater threat to welfare than a pound of carbon monoxide (CX 72, p. 213, CX 74, p. 10, CX 75, p. 2).

### III. The Automobile and Air Pollution

8. Air pollution from automobiles is a major environmental problem. While smog resulting from the automobile was originally considered to be a Southern California problem, it is now becoming a national phenomenon (CX 40E, The President's 1971 Environmental Program).

In terms of total national air pollution, the automobile is the greatest single contributor by weight. Among the pollutants emitted by motor vehicle exhaust are carbon monoxide, hydrocarbons, oxides of nitrogen, lead compounds, and sulfur dioxide. The amount of sulfur dioxide added to the atmosphere by the motor vehicle is, however, insignificant compared to the amounts from stationary sources (CX 75, p. 1).

9. Emissions from uncontrolled automobiles manufactured prior to 1968, came from the crankcase blowby gases, fuel evaporation from the fuel tank and carburetor, and the engine exhaust. The crankcase and evaporative losses were controlled as of 1971. The emissions from the engine exhaust result from the combustion process occurring inside the engine cylinder. Hydrocarbons and carbon monoxide result from incomplete combustion of the fuel-air mixture; oxides of nitrogen form in the high-temperature burnt gases as the combustion process proceeds (CX 115, p. 10).

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10. The annual pollution contributed by 90 million vehicles may roughly be estimated as follows:

66,000,000 tons of carbon monoxide  
 6,000,000 tons of nitrogen oxides  
 12,000,000 tons of hydrocarbons  
 190,000 tons of lead compounds (as lead)  
 1,000,000 tons of sulfur oxides  
 1,000,000 tons of particulates

Within the automobile itself, the relative importance of various emission sources is estimated as follows:

Hydrocarbons: 55% from the exhaust, 25% from the crankcase or "blowby" and 20% from carburetor and fuel tank evaporative losses  
 Carbon monoxide: 99% from the exhaust  
 Oxides of nitrogen: 99% from the exhaust  
 Lead: 100% from the exhaust

"The Automobile & Air Pollution: A Program for Progress Part II" (1967) (CX 75, p. 1).

The Environmental Protection Agency has estimated the motor vehicle's percentage of national emissions in 1969 as follows:

<i>Carbon Monoxide</i>	<i>Hydrocarbons</i>	<i>Nitric Oxides</i>
64.7%	45.7%	36.6%

(CX 43, p. 4-1)

11. Emissions from automotive vehicles are largely responsible for the formation of photochemical smog in certain areas (CX 74, p. 1). The extent to which the automobile contributes to this process varies area by area (Levy, CX 128A; Tr. 1269).

Smog formation is involved in the interaction between oxides of nitrogen, the hydrocarbons, particularly certain classes of reactive hydrocarbons and sunlight (Calvert 365). This stimulates a lengthy and complex series of reactions in which a part or all of the various hydrocarbons are consumed and various secondary products are formed as a result of the photochemical reaction. This entails the formation of products such as nitrogen dioxide, ozone, peroxyacyl nitrates (PAN), aldehydes, organic aerosols and other compounds (Altschuller, CX 124; Tr. 3367-69, CX 5, pp. 2-5, 2-6). In short, the reactions of hydrocarbons are important in the urban atmosphere because they give rise to secondary contaminants and reaction intermediates which cause most of the detrimental effects of hydrocarbon air pollution (CX 5, p. 2-2).<sup>2</sup>

12. In Maryland, the city of Baltimore and the Washington, D.C. metropolitan area have photochemical smog problems in the sense that

<sup>2</sup>The rates at which the various hydrocarbons react covers a very broad spectrum. Some are considered unreactive or react very slowly in contrast to a whole range of hydrocarbons which are quite potent in causing the manifestations of the photochemical process (Altschuller, CX 124; Tr. 3369-70).

concentrations of photochemical oxidants occur substantially above national ambient air quality standards. Levels of photochemical oxidants have been observed which are more than double the standard considered safe from a public health point of view. Photochemical smog in Maryland is of primary concern during the warm summer months. The smog problem is worst from May through September with occasional high concentrations occurring in April and October and perhaps into November. The most severe smog problems, however, occur during July and August (Schueneman 457).

The State of Virginia has a photochemical smog problem evidenced by higher levels of oxidants in those areas with high auto population. These areas are the Northern Virginia area associated with metropolitan Washington, the metropolitan Richmond area, and the metropolitan Norfolk area. Smog in these areas is primarily a problem in the summer months (Watson 959).

#### IV. Health Effects Associated with Automobile Pollutants

13. The long term health effects of air pollution are of considerable concern. With continued exposure, those living in polluted air come a little closer to a diagnosable diseased condition. Such diseases are mainly diseases of the bronchial tree ranging from the common cold to lung cancer. Air pollution may also irritate the eyes, and some pollutants in the air, like lead, may build up in the body until they reach harmful levels (CX 98, p. 4).

14. Carbon monoxide is a poisonous gas entering the blood stream replacing the oxygen needed to carry on the body's metabolism. It is not cumulative in its effects but at high concentrations, it kills; at lower concentrations, it brings on headaches and a slowing of physical and mental activity (CX 98, pp. 4, 8).

There is no measurable health effect from a 10 percent reduction in carbon monoxide from automobiles at the lower end of the scale of concentration which is the exposure for the majority of the population (Carrol, CX 130B; Tr. 2976, 3001). At either end of the scale, it would be difficult to pick a point where a 10 to 15 percent reduction of carbon monoxide would be meaningful in terms of health effects to the people exposed to it (Rokaw, CX 132; Tr. 2542).

15. Most hydrocarbons are not considered directly harmful in the amounts found in urban air (CX 98, pp. 11, 12). The adverse health effects of hydrocarbons result primarily from their participation in the photochemical process resulting in a number of secondary pollutants, the photochemical oxidants (Finding 11, *supra.*)

The most common effect of photochemical oxidants on humans is eye irritation. The level at which this occurs is commonly reached in almost every urban area of the country anywhere from a few days a year to as frequently as a third of the days per year depending on factors such as the amount of sunlight, the density of the automobile population and the ability of the local atmosphere to cleanse itself (CX 98, p. 10).

Oxidants, at the levels routinely found in the cities, make it more difficult to breathe especially in the case of those already suffering from respiratory disease (CX 98, p. 10).

Ozone, one of the photochemical oxidants, can severely irritate the mucous membranes. At certain levels and exposures, it produces coughing, choking, and severe fatigue. At relatively high levels, ozone will interfere with lung function (CX 98, p. 10).

At the temperatures commonly reached when fuels are burned, nitrogen in the air combines with oxygen to form nitric oxide which is relatively harmless, but which usually converts to the more dangerous nitrogen dioxide which is also considered a photochemical oxidant. The rate at which nitric oxide converts to nitrogen dioxide is greatly accelerated by the same conditions which lead to the formation of photochemical smog. It is usually considered to be one of the photochemical oxidants. However, nitrogen dioxide is present in the air wherever fuels are burned and whether or not photochemical smog has been produced. Nitrogen dioxide, which is directly toxic to man and animals, may result in eye irritation and increased susceptibility of infection (CX 75, p. 2, CX 98, p. 11).

The control of hydrocarbons is desirable. This, however, does not permit any findings as to the functional relationship between hydrocarbons and oxidants in any particular region. The purpose of controlling hydrocarbons is not to reduce hydrocarbons as such but to achieve such reductions thereof as will control oxidants (Altshuller, CX 124; Tr. 3400). It is not possible to determine whether a 10 percent reduction of hydrocarbons would have reduced smog in the area relevant to this proceeding. There is no way of predicting what such a reduction will accomplish in any atmosphere in view of the many other interrelated factors such as possible increases in nitric oxides, nitrogen dioxides, aldehydes or various meteorological conditions (Calvert 406, 419, 437).

16. Certain hydrocarbons have produced cancer in laboratory animals (CX 98, pp. 11, 12). A 10 to 15 percent reduction of hydrocarbons would have no significant effect on the potential carcinogenesis of hydrocarbons, however (Rokaw, CX 132; Tr. 2533-34).

17. Atmospheric lead became a public health problem in a significant new way, when in 1924, tetraethyl lead was found to be a useful gasoline additive (CX 75, p. 3).

Lead, a biologically nonessential metallic element, is a pollutant which is clearly toxic under conditions of prolonged and excessive exposure as for example, when paint containing lead is ingested (CX 43, pp. 4-8). "Over 95 percent of the total lead emitted into the atmosphere derives from additives in gasoline. Lead particles can penetrate the lungs and can be retained and absorbed in the blood stream. In urban areas, the margin of safety between blood levels of lead in humans and levels at which lead poisoning symptoms have been identified are growing smaller. While no clear case has been found of lead poisoning from automobile emissions, there is ample reason for concern." (CX 40E).<sup>3</sup>

In densely populated areas such as Baltimore where motor vehicle traffic is heavy, lead in the opinion of the chief of the Division of Air Quality Control of the State of Maryland is a health hazard particularly to children living in such areas (Schueneman 454).

18. Particulate matter from automobile exhaust poses a health problem for the following reasons:

Most of the liquid and solid particles in auto exhaust are submicroscopic. Their concentration in automobile exhaust is often in excess of  $10^7$  particles per cubic centimeter and their emission rate may exceed  $1 \times 10^{12}$  particles per second at a speed of 30 miles per hour. One of the most serious aspects of modern-day widespread levels of air pollution is the generation and increasing concentrations of submicroscopic Aitken nuclei. These particles are of size less than 0.1 microns diameter and serve as "condensation" nuclei which may absorb pollutants. They constitute the majority of airborne particles now found in urban and most "country" air. Particles in this size range are readily coated with monomolecular layers of organic or inorganic chemicals while in the atmosphere or during passage through the upper respiratory tract. The particles thus may act as carriers for other pollutants and produce more serious adverse effects than larger size particulates which are intercepted in the nose or throat.

(The Automobile & Air Pollution: A Program For Progress Part II, U.S. Department of Commerce 1967; CX 75, p. 4).

The sulfur oxide pollutants aggravate existing respiratory disease and contribute to its development (CX 98, p. 9).

<sup>3</sup> In a notice of proposed rulemaking on Feb. 23, 1972, 37 F.R. 3882 (RX 26A-D) pertaining to the "Regulation of Fuels and Fuel Additives," the Administrator of the Environmental Protection Agency stated:

"Based on the available evidence, the Administrator has concluded that *air borne lead levels exceeding 2 micrograms per cubic meter, averaged over a period of 3 months or longer, are associated with a sufficient risk of adverse physiologic effects to constitute endangerment of public health.* Since airborne lead levels in many major urban areas currently range from 2 to somewhat over 5 micrograms, and since motor vehicles are the predominant source of airborne lead in such areas, attainment of a 2 microgram level will require a 60 to 65 percent reduction in lead emissions from motor vehicles\* \* \*." (RX 26B) (emphasis supplied).

## V. The Additive

19. DMA-101, referred to as CA-101 in Crown's advertisements, is a gasoline additive manufactured by the E.I. du Pont de Nemours Company of Wilmington, Del. (RX 1A-B).

20. Du Pont has been selling detergent additives since 1958 (Scheule 818). Du Pont's first offering was RP-2 which provided rust prevention and anti-icing properties. It was marketed about 1958 or 1959 (Scheule 818).

In the early 1960's, RP-2 was modified to the DMA-4 and DMA-4A additives which were to provide carburetor icing protection, anti-rust protection and carburetor detergency (Scheule 819).

In the period 1967-1968, du Pont began work on a second generation multifunctional additive to clean up existing deposits as well as to prevent deposit buildup and to combat malfunctions of valves in engines due to deposit formation on intake valves. This work led to the development of the DMA-101 additive which is a combination of a hydrocarbon polymer and DMA-4, an amine neutralized phosphate. Du Pont first introduced DMA-101 in Nov. 1969 (Scheule 819-20, Hagele 1156, Bettoney 1538-39).

21. An additive such as DMA-4 provides carburetor detergency by virtue of its surfactant mechanism. DMA-101 includes DMA-4, the surfactant, and a polymer which acts in concert with the surfactant (Bettoney 1533).

Another of du Pont's detergent additives in the DMA-100 series is DMA-115. It has a higher DMA-4 content versus polymer content than does DMA-101. However, all additives in the series function similarly and are considered by du Pont to be in the same class (Scheule 821, 836). With respect to the reduction of exhaust emissions, du Pont found on the basis of laboratory tests and field tests that there was very little difference in their performance in this respect with a very slight edge in favor of DMA-115 (Scheule 836-37).

22. In DMA-101, the DMA-4 component works as a surfactant which has physical and chemical properties enabling it to attach to the surface of a metal vessel such as a carburetor. By interaction with the metal, the additive forms a water and dirt repellent film and thus prevents the buildup of deposits (Bettoney 1532-34). The polymer component of DMA-101 acts with the surfactant to soften and penetrate deposits which when loosened are washed away (Bettoney 1534).

23. The DMA-101 additive is probably an effective carburetor cleanliness detergent (Cattaneo 1919).

24. Carburetor deposits may form or accumulate in almost any place in the carburetor. The ones that are critical to the mixture of air and fuel are particularly those in the neighborhood of the throttle plate (Bettoney 1512-13). Such deposits interfere with the flow of air with an effect similar to the closing of the throttle valve (Tr. 1514). The net effect is to enrich the air-fuel mixture *viz.* the mixture has more fuel than the manufacturer had in mind when the carburetor was built (Tr. 1515). An enrichment of the air-fuel ratio will cause formation of higher amounts of carbon monoxide and hydrocarbons in automobile exhausts (Tr. 1575). In addition, the deposits on intake valves and some other parts of the engine reached by gasoline with DMA-101 can increase exhaust emissions (Scheule 910).

25. The amount of improvement in automobile exhaust emissions, as a result of the use of the CA-101 additive in a car, depends on how dirty the carburetor or intake system is (Bettoney 2100-01). Such reductions could vary from some small amount up to the order of 50 to 60 percent for some carburetors (id 2099-2100). Prior use of another additive such as DMA-4 would limit the formation of deposits in these areas (Scheule 852). And in the case of a clean or new carburetor, there would be little or no reduction of exhaust emissions as a result of the use of CA-101 (Bettoney 2099-2100).

26. Considered in the light most favorable to respondent, the available technical data would support a claim for a 10 percent overall reduction in the general car population of hydrocarbons and carbon monoxide as a result of CA-101, if used by all cars (Bettoney 2049, 2099, 2124).<sup>4</sup>

27. The CA-101 additive will not reduce exhaust emissions of hydrocarbons and carbon monoxide below the levels that new cars will emit (CX 123C).

28. An automobile may have high emissions because of mechanical conditions which can only be improved by mechanical repairs and on which the additive's detergent action will have no effect (Bettoney 2081, 2122; Cattaneo 1944).<sup>5</sup>

Some cars are high emitters of pollutants because of bad spark plugs,<sup>6</sup> points, wiring, etc., and the use of an additive would not cure that condition. The same would be true as to bad wiring (Bettoney 2047,

<sup>4</sup>The opinion of the director of du Pont's Petroleum Laboratory on this point was based on du Pont's testing and the literature generally pertaining to carburetor detergents similar in their function to DMA-101. It is further the opinion of this witness that CA-101 is one of the four most effective detergent additives and that it is possible these additives could achieve a result similar to CA-101 in reducing emissions (Bettoney 2101, 2050).

<sup>5</sup>*E.g.*, carbon monoxide emissions may drastically increase when the carburetor metering rod linkage is out of position (CX 152K; Tr. 2081).

<sup>6</sup>Spark plug misfires increase hydrocarbon and carbon monoxide emissions substantially (CX 115, p. 23).

2122; Cattaneo 1944). Similarly, a deterioration of the timing of an engine can also result in an increase of emissions (Bettoney 2047). Burned valves, although not occurring regularly at this time, nevertheless, exist in the general car population and a car with that condition would put out "extremely high hydrocarbons" (Mills, CX 129; Tr. 3085).

In addition, the air-fuel ratio can be reduced by factors such as an automotive choke sticking closed or because of a very dirty air cleaner element. This would generally increase emissions of carbon monoxide and hydrocarbons (CX 65, p. 2-13). The additive would not remedy those conditions.

29. The CA-101 additive will not clean all engine components. It will not affect deposits such as exhaust valve tulips, combustion chamber deposits, crankcase area deposits or rocker arm cover deposits (CX 123F; Scheule 872-73). Combustion chamber deposits increase hydrocarbon emissions (Bettoney 2085).

30. In fact, "there are many, many factors that influence the emissions of vehicles, \* \* \* many of these factors are extremely subtle and cannot be detected in all cars at all times." (Bettoney 1633; See also Mills, CX 129; Tr. 3079-80; CX 367).

31. The additive may work in a car but uncontrolled variables beyond the reach of the additive may nevertheless cause emissions from some vehicles to increase (CX 148, Scheule 883-87, 929-32).<sup>7</sup> Certain vehicles suffering from mechanical defects and subjected to severe operating conditions will not realize significant reductions of carbon monoxide and unburned hydrocarbons as a result of a detergent additive such as CA-101 (CX 152).<sup>8</sup>

32. Gasoline with CA-101 will not significantly reduce emissions of carbon monoxide and unburned hydrocarbons in every vehicle in which it is used. (Findings 27 to 31, *supra*).

<sup>7</sup> Respondent states in connection with du Pont's road test, CX 148, "In other words, the additive probably worked in those cars, but *uncontrolled variables beyond the reach of the additive caused emissions from those vehicles to increase* (Scheule 883-87). In the other 18 cars, the action of the additive overwhelmed the variables and the net effect from all 23 cars was a net decrease of HC emissions by about 9 percent (Scheule 883-87, 929-32)" (emphasis supplied) RRPF p. 18.

<sup>8</sup> In the case of a nine thousand mile test "involving twenty high-mileage and high blowby taxicabs, no significant differences in exhaust emissions or other engine parameters were indicated with the use of DMA-115 relative to a control gasoline. Excessive variability caused by test severity and vehicle condition overshadowed the anticipated fuel effect." (CX 152A) For future testing it was recommended:

"1. Use other tests to evaluate the effectiveness of DMA-115 in reducing exhaust emissions.

"2. *In future tests with similar objectives, select fleets with engines and carburetors responsive to deposits and avoid severe operating and maintenance conditions*" (emphasis supplied) (CX 152D).

See also CX 65, "Control Techniques for Carbon Monoxide, Nitrogen Oxide, and Hydrocarbon Emissions from Mobile Sources" U.S. Department of Health, Education and Welfare (1970) p. 4-9:

"In a large group of vehicles, a few of them could not meet any reasonable emission limit, no matter how much they were repaired or tuned up. This is due to the variability of emissions of both controlled or uncontrolled vehicles. \* \* \*

Crown gasoline with CA-101 will not produce pollution free motor vehicle exhaust (CX 123A-B). Motor vehicles using Crown gasoline with CA-101 emit unburned hydrocarbons, carbon monoxide, oxides of nitrogen, lead, particulates, sulfur oxides and other pollutants (CX 123B). Further, the CA-101 additive has no beneficial effects on emissions of oxides of nitrogen, lead, particulates and sulfur oxides and the use of the additive will not reduce the emissions of these pollutants (CX 123E).

#### VI. Testing of the Additive

33. Du Pont has performed tests of the DMA-4, DMA-101 and DMA-115 additives for the purpose of demonstrating their keep clean and clean up effects on carburetor and intake system deposits<sup>9</sup>, and to measure the resulting effect on engine emissions of hydrocarbons and carbon monoxide. In that connection, du Pont has utilized laboratory engine tests (CX 110Q; RX 13), programmed chassis dynamometer tests (RX 7, 10, 71, 110F-I), and road tests (CX 148, 149, 152; RX 69, 70) (Bettoney 1537, 1541, 1602-12).

#### *Accelerated Laboratory Testing Procedures*

34. The director of du Pont's Petroleum Laboratory developed a laboratory test procedure for testing DMA-101 for its clean up and emission reduction properties in early 1970 (Bettoney 1612).

35. Most of the laboratory tests were conducted on Plymouth engines mounted on an engine dynamometer and artificially "dirtied up" by the use of a reference fuel, MS 08, to form deposits in the carburetor and other parts of the induction system simulating deposits in "dirty" engines found on the road. Du Pont took steps to ensure that the deposits accumulated during the accelerated "dirty up" stage adhered to the carburetor and were representative of those on the road. The engine fuel was then switched to a commercial premium gasoline containing DMA-101 and the engine run for a number of hours. Emission measurements were taken at idle because at that stage, the emissions of carbon monoxide and hydrocarbon are greatest and the deposits on the throttle area affect the proper functioning of the carburetor. Measurements at idle correlate with measurements during deceleration of the vehicle when the throttle plate is similarly closed (Bettoney 1612-22; Verelli 1067-69; CX 65, p. 4-14; Scheule 904-16).

MS 08, which is used in the "dirty up" phase of such tests, is a reference fuel, the composition of which is controlled from the stand-

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<sup>9</sup>"Keep clean" means keeping a carburetor clean as opposed to cleaning up or removing deposits (Tr. 1534).

point of its tendency to form varnish and sludge. To this extent, MS 08 is a dirtier gasoline than most commercial gasoline (Bettoney 1546). It is a fuel widely used in the oil industry for testing purposes generally related to engine cleanliness and has been used in tests by the United States Bureau of Mines (Hurn 1657). MS 08 represents between 3 to 10 percent of the different types of gasoline sold in the United States (Bettoney 1546; Hurn 1658).

In the period Feb. through Nov. 1970, over 25 tests were run using this procedure and the range of reduction of hydrocarbon and carbon monoxide emissions found was on the order of 40 to 80 percent (Bettoney 1625-26).

36. Although du Pont took steps to ensure that the deposits created by the accelerated procedures were representative of those accumulated on the road, the memorandum of the director of du Pont's Petroleum Laboratory dated May 15, 1970<sup>10</sup>, seems to corroborate the opinion of the Commission's expert that deposits accumulated during an accelerated test tend to be more sooty and fall off more easily than those encountered in actual service (Verelli 1032, 1044-54).

37. This accelerated testing procedure was devised to simulate the performance of a small group of high emission cars which may comprise 5 to 15 percent of the general car population. As to this group of cars, it is the opinion of the director of du Pont's Petroleum Laboratory, a 50 to 60 percent improvement of emissions in road performance could be predicted on the basis of such laboratory tests (Bettoney 2096-98).

38. CX 110Q is a report dated March 30, 1970, entitled "A Study On The Effect Of DMA-101 On Exhaust Emissions From A Laboratory Engine." The report summarizes the results of tests of DMA-101 on Plymouth engines mounted on a dynamometer stand. The accelerated test procedure set forth in Finding 35 was utilized, and a reduction of approximately 66 percent in hydrocarbon emissions and a reduction of approximately 41 percent in carbon monoxide emissions was reported (CX 110Q).

39. RX 13 is a report dated October 5, 1970, entitled "The Effect Of DMA-101 And DMA-115 On Exhaust Emissions In A Laboratory Engine." The test procedure utilized was similar to that of CX 110Q, except that the reference fuel, MS 08, was used both in the dirty up and cleanup phases of the test. According to the test report, both additives reduced hot idle emissions of carbon monoxide and hydrocarbons in the case of a Plymouth 6 cylinder laboratory engine with an artificially dirtied carburetor (Bettoney 1623-24).

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<sup>10</sup> See Finding 55, *infra*.

*Programmed Chassis Dynamometer Tests*

40. Du Pont's testing program for detergent multifunctional additives utilized chassis dynamometers and programmed chassis dynamometers (Bettoney 1478-81).

A chassis dynamometer is a machine which supports the drive wheel of a vehicle and can be adjusted to provide the power requirements imposed upon an engine as if the car were on the road (Mills CX 129; Tr. 3037). In the case of a programmed chassis dynamometer, signals are sent by a tape to the engine in order to simulate various conditions of on-the-road driving (Bettoney 1477-78). Use of this device eliminates many of the uncontrolled variables inherent in on-the-road driving (Scheule 901-02).

41. RX 9 is a report entitled "Effect of Carburetor Deposits and DMA-4 on Fuel Economy," summarizing a number of programmed chassis dynamometer tests. According to this report, vehicles using the du Pont additive DMA-4, consumed less fuel than did vehicles using the same fuel without the additive. In the opinion of the director of du Pont's Petroleum Laboratory, such tests confirmed the effects of carburetor deposits on fuel economy (Bettoney 1518).

42. RX 10 is a report dated October 1966, entitled "Effect of Du Pont Multifunctional Additive No. 4 (DMA-4) On Exhaust Emissions Of Vehicles Equipped With Air Injection Systems." This involved a test on four new 1966 Chevrolets with 12,000 miles being accumulated on programmed chassis dynamometers. According to the test report, hydrocarbon emissions from the cars using the additive remained substantially unchanged throughout the 12,000 miles in contrast to the control cars while the carbon monoxide emissions increased to a lesser extent than in the control cars.

43. RX 7 is a report dated Nov. 1968 of a programmed chassis dynamometer test entitled "Effect of Du Pont Multifunctional Additive No. 4 (DMA-4) on Exhaust Emissions of Plymouths Equipped with CAP Exhaust Control Systems." This was a 15,000 mile test involving four Plymouths equipped with CAP exhaust control systems. Two of the cars had gasoline with the additive DMA-4 and two cars were operated on the base gasoline. At the end of the 15,000 mile test, the two cars with the additive had lower hydrocarbon and carbon monoxide emissions than the cars running on the base gasoline (Bettoney 2073).

44. RX 71 is a table summarizing the results of a test on taxi engines installed in automobiles and run on du Pont's programmed chassis dynamometers. This test was done concurrently with the road test on

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the taxi fleet set forth in CX 152 (Bettoney 2114).<sup>11</sup> The cars were run on programmed chassis dynamometers for 16 or 18,000 miles and deposits were accumulated in the carburetors through the use of MS 08 and other gasoline components (Bettoney 2149). The cars were then operated on a control gasoline and gasoline containing DMA-115. At the termination of the test, there was a decrease in the hydrocarbon and carbon monoxide emissions on the cars operated on DMA-115 (Bettoney 2147).

#### *Road Tests*

45. In the case of road tests involving cars taken at random with different drivers driving in different ways and different ways of maintaining the vehicles, many variables are introduced which are completely uncontrolled. As a result, a large number of cars is required to get significant results (Scheule 901).

46. CX 149 is a report dated June 3, 1970, of the first road test on the DMA-101 additive. It was a 2000-mile road test employing three fleets of five privately owned automobiles. According to the report, "DMA-101 did not show a consistent trend towards reduction of engine emission levels when used at 100 and 200 lb. concentrations in Getty premium gasoline." (CX 149C). The only conclusion drawn from the test "was that we [du Pont] should run tests more carefully and for a longer period of time than we had in that work" (Bettoney 2108).

47. CX 152A-AF is a test report evaluating the effect of the use of DMA-115 on exhaust emissions in a 9000-mile test involving twenty high mileage and high blowby taxicabs. The draft report dated Jan. 25, 1971, indicated no significant differences in exhaust emissions as a result of DMA-115 (CX 152A). This report was not completed because du Pont, at the time, felt the work reported therein was inconclusive (Bettoney 2110). The mechanical condition of the vehicles, in du Pont's view, was responsible for the excessive variability and inconclusive nature of the emission test results (CX 152I).

48. CX 148A-H is a report dated July 1971 of a road test of the "Effect of DMA-101 in Reducing Exhaust Emissions and Improving Compression Pressures." The test began in March of 1970, and finished in September (Scheule 882).

The test involved "23 privately owned American cars during approximately 3500 miles of normal driving" (CX 148A). According to the report, the 9 percent average reduction of hot cycle hydrocarbons

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<sup>11</sup> The draft report of that test is dated Jan. 25, 1971.

collected pursuant to the 1968 federal test procedures was statistically significant. No statistically significant reduction of carbon monoxide was shown (CX 148C).<sup>12</sup>

The 23 cars in the test are not a full cross section of the general car population, so no complete projections can be made from this test to the full car population (Cattaneo 1862).

49. RX 69 is a report on a road test entitled "Effect of DMA-115 on Vehicle Performance in Eight Foreign Cars" dated July 1971. According to the report, the effect of DMA-115 on vehicle performance was determined in eight privately owned and operated European and Japanese automobiles, the car owner adding DMA-115 to the gasoline purchases at the service station.<sup>13</sup> According to the report, after 3000 miles, there was an average reduction in hot idle exhaust emissions of both hydrocarbons and carbon monoxide for six cars, but individual results were "scattered." The average reduction of hydrocarbons measured by the NDIR method was 9 percent, and the reduction of carbon monoxide shown at idle, 13 percent. Over the road fuel economy, according to the report, improved 11 percent.

50. RX 70 is a report dated September 1971 of a "Consumer Car Test — Effect of DMA-115 on Exhaust Emissions and Engine Performance." This test involved a road evaluation of DMA-115 using 51 employee owned and operated automobiles one to eight years old. The cars were divided into a control group of 26 cars using a completely formulated premium gasoline, and a second fleet of 25 cars operating on the same base gasoline to which DMA-115 had been added. Measurements were made at the start of the program and after approximately 3000 miles of family driving. According to the test report in the DMA-115 fleet, carbon monoxide emissions decreased by 6 percent at hot idle and 13 percent at 15 miles per hour. Average hydrocarbon emissions according to the report were reduced by 11 percent or 8 percent depending on the method of measurement used. The report further stated that an 11 percent average improvement in fuel economy had been observed for the cars operating on DMA-115.

*Correlation of Test Results With Performance  
In the General Car Population*

51. It is the opinion of the director of du Pont's Petroleum Laboratory that there is a complete correlation between reduction of emissions

<sup>12</sup> Of the 23 cars tested, at least 5 showed an increase in hydrocarbons (Scheule 936).

<sup>13</sup> The cars were operated for a test period of July to October 1970.

by DMA-101 shown in laboratory tests and the reductions of emissions in actual service (Bettoney 1632). The view that such correlation is complete conflicts with other testimony. (Findings 52-56, *infra*).

52. Accelerated test procedures are commonly used by the automobile or oil industries. They may be used for initial screening purposes to separate the marginal from the more promising candidate products or to obtain the earliest possible answers at the least possible expense (CX 129; Mills 3149-50). However, "accelerated testing could be a poor predictor of real life operation." (id. at 3031).

53. The test procedures utilized in testing the emission reducing properties of du Pont's detergent additives were essentially accelerated procedures. Tests such as CX 110Q utilizing accelerated procedures are valid as laboratory tests and the data therein was properly obtained (Cattaneo 1963). Such a laboratory test gives a good indication that the additive reduces emissions. Accelerated procedures, although they are appropriate as development tests for an indication of what might happen in the general car population do not, however, support claims as to actual performance in the general car population without further testing (Cattaneo 1962-63).

54. Du Pont's laboratory test given as a reference to support the claimed emission reductions incorporates a procedure simulating the performance of a small group of high emission cars comprising 5 to 15 percent of the general car population.<sup>14</sup> Reductions in the case of cars not in this group might be much smaller (Finding 25, *supra*).

55. On May 15, 1970, the director of du Pont's Petroleum Laboratory wrote as follows to D. R. Diggs, the technical director of the company's Petroleum Chemicals Division:

Several major oil companies have shown a high interest in buying DMA-115, provided du Pont can supply data showing vehicle emission reduction properties. Preferably, DMA-115 should reduce emissions in normal automotive service, but most, if not all, potential customers will probably buy our product if it can be shown to reduce emissions in an on-the-road accelerated test procedure such as was used by Chevron in their promotion of F-310.

Such accelerated procedures are usually devised to simulate the performance of that small group of high-emission cars in the population which have deteriorated through the use of poor lubricants, infrequent oil changes, or severe operation such as encountered in taxi or police operation.

We have demonstrated that DMA-115 will reduce emissions by cleaning carburetors that have been dirtied by an accelerated laboratory test procedure, but *we have been unable to*

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<sup>14</sup> According to one of the Commission's expert witnesses, tests on vehicles with very dirty or heavily deposited engines suggest that "if the general motor vehicle population is composed of vehicles with varying degrees of induction system deposit formations to the point of fouling that there would certainly be a general reduction in hydrocarbons and carbon monoxide resulting from the use of an extremely effective additive." (Mills, CX 129; Tr. 3143).

*demonstrate conclusively such benefits for either DMA-115 or F-310 in cars operated in normal service, presumably because the carburetors were not particularly dirty or because the dirt was of the type that could not be removed from the additives.* (Bettoney 2065-67)<sup>15</sup> (emphasis supplied)

This contemporaneous statement by the director of du Pont's Petroleum Laboratory, preceding by approximately two months, Crown's advertisement of the additive in July of 1970, tends to corroborate the testimony of Commission witness Dr. Cattaneo on this point.

56. It takes numerous tests on many different engine configurations, carburetor configurations, and vehicle assemblies to determine what the overall effect of an additive would be (Verelli 1031). To secure data valid for the general car population, you would need a sample representing the different vehicles registered by type, years, models, etc., and within such groups, it would be necessary to consider items such as engine sizes or transmissions (Verelli 1036-37).

#### VII. Crown's Advertising and Promotion of CA-101

57. In the late winter and spring of 1970, Crown's officials became aware that the automotive emission problem was attracting a great deal of concern particularly in the California area (Loving 1247-48). In this connection, Crown's corporate officials had read about the Chevron F-310 additive (Loving 1248).

Du Pont's account manager involved in the sales talks with respondent was also aware that "back in 1970 the environmental movement was just really getting under way" (Hagele 1165).

58. In connection with the automotive emission problem, Crown's officials felt there were two courses open to them, namely, to market a low lead or no lead gasoline or to take the additive approach (Loving 1249). Crown decided to market a gasoline with an additive because it considered the low or no lead approach impractical and too expensive (Loving 1250, 1317-18).

59. Crown accordingly called in a number of manufacturers of additives which were "designed to be effective in the control of automotive emissions" (Loving 1251). Sometime after June 18, 1970, Crown's officials decided to purchase du Pont's additive DMA-101 (Loving 1253, 1257).

60. As a part of its selling effort, du Pont furnished Crown, in the course of oral discussions and through brochures, bulletins and test

<sup>15</sup> According to respondent, "DMA-101 and DMA-115 are closely-related additives. They are similar chemically and functionally. Performance obtained through the use of DMA-115 should be indicative of similar effectiveness through the use of DMA-101." (RPF 34).

reports with technical data relating to additive's detergent action and to its effect on automobile emissions (RX 1A-F, RX 2A-2PP; Hagele 1158-59, 1161, 1164-65).

In connection with the decision to purchase DMA-101, John I. Loving, Crown's vice president of sales, asked du Pont's officials whether du Pont would approve its advertising of DMA-101 and support Crown's statements therein. He received assurances that Crown would get such approval assuming that du Pont had a chance to review respondent's advertising copy (Loving 1257-58).

Crown's vice president of sales and its advertising department took full control of the preparation of the advertisements for the additive. An outside agency placed such advertisements in the media (Loving 1264).

Crown submitted its proposed advertising copy to du Pont's officials for review and in those instances where du Pont's employees suggested changes such revisions were made (Loving 1260-64). Radio scripts promoting the additive and point-of-sale materials such as pole signs were also forwarded to du Pont for review (Loving 1274), and Crown received du Pont's approval prior to dissemination of any of the advertising concerning the additive (Loving 1279).

61. Respondent's promotion of gasoline with CA-101 was dominated by a clean air theme. That theme was selected by Crown for the following reasons:

Well, as you do in advertising, you look for a shorthand word to convey to the public whom you are addressing what you are talking about.

Clean-Air was the name of the legislative Act which Congress passed in the 1960's. It had become a word or a phrase in common usage which related to the air pollution problem, and probably in particular the automotive emission problem.

So clean-air was taken \* \* \* out of common usage. (Loving 1270).

and it was the intention of Crown in using that term to give "a slogan type of impression, that clean-air was descriptive of what we were talking about" (Loving 1270).<sup>16</sup>

62. The promotion of Crown as the Clean Air gasoline capitalized on the public's concern with pollution and the fact that back in 1970, the environmental movement was "really getting underway." (Finding 57, *supra*)

#### *Newspaper Advertisements*

63. On July 13, 1970, respondent ran an advertisement in the Baltimore Sun papers and the News American promoting Crown gasoline

<sup>16</sup> According to the witness, the clean air theme was analogous to slogans such as "A tiger in your tank" (Tr. 1270).

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containing formula CA-101 (CX 108)<sup>17</sup> which was not rerun in any of those papers after that date (Loving 1268).

The advertisement was dominated by the headline:  
What's behind the new Crown sign?  
NOW: New Clean-Air Gasoline CA-101

The phrase "NOW: New Clean-Air Gasoline" was in type approximately twice as large as the remainder of the headline of this advertisement. The advertisement under the headline contained a number of headings in smaller type *viz*:

Dramatically reduces exhaust emissions  
Gives better mileage  
Crown guarantees its gasoline quality  
Express-lane service at the pump island  
No stamps or games means savings  
Save your cash  
Maryland's fastest-growing gasoline stations

Each heading is followed by text material in apparently ordinary type.

Under the heading "Dramatically reduces exhaust emissions" respondent further represented:

Crown Premium 100 PLUS and Super Regular Gasoline now contain Formula CA-101. This remarkable new gasoline additive dramatically reduces exhaust emissions from your engine. Crown with Formula CA-101 reduces unburned hydrocarbons by as much as 66%\*, deadly carbon monoxide 41%\*. Clearly, this is a step toward cleaner air. Crown with Formula CA-101 works well in old cars and keeps new cars clean. Every car on the road should be using it.

Under the heading "Gives better mileage" respondent represented:

Crown with CA-101 is both new and different. You get better gasoline mileage. It cleans your engine and keeps it clean. Your engine performs better, more efficiently. It breathes easier. And so do you. Crown, with Formula CA-101 burns cleaner, more completely. You use less gasoline. As a result, you get more miles per gallon, more miles per dollar.

Under the heading "Crown guarantees its gasoline quality" respondent represents in pertinent part "Now Crown, with Formula CA-101, gives you better mileage and cleaner air."

64. Crown also advertised its gasoline with the CA-101 additive in a Richmond, Va. paper on August 14, 1970. That advertisement in the lower right hand corner represented:

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<sup>17</sup> Appendix A.

## NOW: NEW CLEAN-AIR GASOLINE WITH FORMULA CA-101

New Crown with Formula CA-101 dramatically reduces exhaust emissions from your engine. Reduces unburned hydrocarbons by as much as 66%\*, deadly carbon monoxide 41%\*. Burns cleaner, more completely. You use less gasoline. New Formula CA-101 is now available in both grades of Crown gasoline. Costs no more. Every car on the road should be using it.

\*Source: "A Study on the effects \* \* \* of Exhaust Emissions"-DuPont Chemical Co. (CX 108A)<sup>18</sup>

Some or all of the foregoing statements appeared once in each of two Richmond, Va. papers and once in each of three Baltimore, Md. papers (Answer, par. 4).

65. In Sept. 1971, Crown ran an advertisement in the Atlanta, Georgia area representing in pertinent part that "Crown gasolines contain Formula CA-101 from Du Pont for cleaner air. You can't buy better gasoline" (CX 108 O; Tr. 2016).

*Direct Mail Advertising and Handouts*

66. CX 108F was an advertisement sent to credit card holders, BankAmericard and Mastercharge holders. In Maryland and Virginia, 15-20,000 of these brochures were distributed in the mail (Loving 1305). And approximately 4000 copies of these brochures were printed for the use of respondent's service stations (Loving 1306).

CX 108F which is dominated by a banner heading stating "New Clean-Air Gasoline with Formula CA-101" is virtually identical to CX 108.

67. Crown used another direct-mail handout in Virginia in Sept. of 1970, which was mailed to credit card holders and utilized at service stations (CX 108N; Loving 1306-07). This brochure also continued the "New Clean-Air Gasoline" theme in a box in the lower right hand corner.

*Radio Commercials*

68. Crown disseminated over Baltimore stations WFBR, WCBM, WBAL, and WWIN, a radio commercial with the following script between July 13, 1970 and September 11, 1970 (Tr. 1236). The commercial stated in pertinent part:

[\* \* \*] Crown is the gasoline you should be using. It's now the Clean-Air gasoline because it now has formula CA-101 [\* \* \*] What is this CA-101? Well \* \* \* it's an additive made by Du Pont \* \* \* and what it does is to reduce exhaust emissions. That's right. Your

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<sup>18</sup> Appendix B

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exhaust will have as much as 66% less unburned hydrocarbons \* \* \* and 41% less deadly carbon monoxide. How about that? You breathe easier \* \* \* and so does your car's engine. Because Crown with CA-101 burns more completely \* \* \* keeps your engine cleaner \* \* \* helps it run more efficiently \* \* \* so you get better mileage. And you *still* save up to 5 cents a gallon with Crown. So come on over to Crown \* \* \* do your bit for cleaner air\* \* \*. (CX 108L)<sup>19</sup>

69. Crown ran a radio commercial in the state of Virginia stating in relevant part:

[\* \* \*] Fill up with Crown's High Octane Clean Air gasoline \* \* \* gives you up to 66% less unburned hydrocarbons in your car's exhaust \* \* \* 41% less deadly carbon monoxide [part omitted] Fill up with Crown's Clean Air gasoline now\* \* \*. (Tr. 1236-37; CX 108H).<sup>20</sup>

#### *Point of Sale Materials*

70. In keeping with the "Clean Air" theme, respondent distributed the following point of sale materials to its stations:

Buttons for station attendants with the legend "BREATHE A LITTLE EASIER with FORMULA CA-101" (CX 108B);

Pole signs with the slogan "NEW Clean-Air GASOLINE With Formula CA -101" (CX 108C);

Pole signs stating "Clean-Air GASOLINE Good for All Cars Costs No More" (CX 108D); and pump signs stating "New CLEAN-AIR FORMULA CA-101" followed in smaller print with the following representation:

Reduces Exhaust Emissions \* \* \* Unburned Hydrocarbons to 66%, Carbon Monoxide to 41% Cleans Engines Gives Better Mileage (CX 108E).

At present, Crown utilizes a pump sign with the representation "100 Octane contains Formula CA-101 For Cleaner Air" (CX 108M; Loving 1302-03).

71. Pole signs such as CX 108C and 108D usually last about ninety days (Loving 1275, 1299). Pump signs such as CX 108E would last about six months (Loving 1277, 1301-02). In the case of the buttons to be worn by station attendants with the legend "Breathe A Little Easier With Formula CA-101," while it is difficult to determine how long they were actually utilized, it was Crown's intention that they would be worn for three or four weeks (Loving 1300-01).

#### *Crown's Representations*

72. Crown's promotion of gasoline with the CA-101 additive is directed to drivers and owners of automobiles in the general car population. No distinction is made as to the effectiveness of the gasoline containing the additive as it might pertain to different makes, models or

<sup>19</sup> Elisions in brackets were not contained in original.

<sup>20</sup> Elision in brackets not in original.

age groups of automobiles. Nor is any distinction made on the basis of the usage which a car might have been given (Findings 63 to 70, *supra*).

73. Crown, by use of the "Clean-Air Gasoline" theme in newspaper advertising, radio commercials, point of sale materials, handouts and direct mail advertising, represented that the advertised gasoline is pollution free in the sense that it adds no contaminants to the air (CX 108, 108A, 108L, 108H, 108C-108E, 108F, 108N).<sup>21</sup>

Crown gasoline with CA-101 will not produce pollution free motor vehicle exhaust; rather, automobiles using such gasoline will emit unburned hydrocarbons, carbon monoxide, oxides of nitrogen, particulates, sulfur oxides, lead and other pollutants (Finding 32, *supra*). The claim that Crown gasoline produces pollution free motor vehicle exhaust is misleading.

74. In the case of respondent's newspaper advertising and direct mail advertising, the Clean-Air slogan so dominated the text of such materials that the explanatory material therein cannot, as a practical matter, be considered as qualifying the claim. Similarly, Crown's point of sale material, as a practical matter, contained no text qualifying the Clean-Air theme.<sup>22</sup>

The use of the Clean Air slogan in newspaper advertising, radio commercials, direct mail advertisements and handouts were disseminated in a setting where Crown's point of sale materials continued and reinforced the theme essentially without qualification for periods of three weeks (station attendant buttons) to six months (pump signs). (Findings 70-71, *supra*)

To the extent that respondent's dominant representation of "Clean-Air Gasoline" is modified by phrases such as "a step to cleaner air"<sup>23</sup> or references to reductions of emissions in smaller type in the body of the text, the meaning of such advertising or promotional claims may become ambiguous. The Clean-Air theme as thus modified could still leave the impression that the gasoline is pollution free although the more careful reader might construe the claim as representing that it emits fewer pollutants.

75. Crown's promotion of the Clean-Air theme, coupled with the reference to "Dramatically Reduces Exhaust Emissions" (CX 108, 108A, 108F), the reference to deadly carbon monoxide and the claims "It [your

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<sup>21</sup> The adjective "clean" is an express representation that the product or material referred to is free of contaminants or "not dirty."

<sup>22</sup> The possible exception being pump signs where there is a specific reference to reductions of unburned hydrocarbons and carbon monoxide, and even here the clean air slogan dominated by virtue of the disparity in type (CX 108E).

<sup>23</sup> CX 108, 108F, and 108L state "do your bit for cleaner air."

engine] breathes easier. And so do you" (CX 108, 108F), "You breathe easier" (CX 108L), and "Breathe a Little Easier with Formula CA-101" (CX 108B), gives the net impression that the additive will cause a reduction of automobile exhaust emissions significant in the sense that it will effectively reduce the adverse effects of air pollution including the health hazards associated therewith in a meaningful or tangible way.<sup>24</sup>

The most favorable finding which can be made from respondent's point of view is that use of CA-101 might overall reduce carbon monoxide and unburned hydrocarbons by 10 percent in the general car population (Finding 26, *supra*).

A reduction of hydrocarbons and carbon monoxide by 10 percent in the general car population would not support a claim that the effects of air pollution would be reduced to the extent that health hazards would be diminished in a meaningful way (Findings 14 to 16, *supra*).

The additive leaves untouched pollutants from automobile exhaust which are detrimental to health, namely, lead, particulates, nitric oxides, and sulfur oxides (Findings 32, 17, 18, *supra*).

The additive does not significantly reduce the health hazards associated with air pollution and the implied representation to the contrary in respondent's advertising and promotion of Crown gasoline with CA-101 is misleading.

76. The claims "New Clean-Air Gasoline," "Dramatically reduces exhaust emissions," "reduces unburned hydrocarbons by as much as 66 percent, deadly carbon monoxide 41 percent," "Crown with Formula CA-101 works well in old cars and keeps new cars clean: Every car on the road should be using it" (CX 108, 108F), and "Good for all cars on the road" (CX 108F) imply that the CA-101 additive will significantly reduce emissions of carbon monoxide and unburned hydrocarbons from every motor vehicle in which it is used.

The representations "New Clean-Air Gasoline" and "Dramatically Reduces Exhaust Emissions" imply that there will be substantial reductions from existing levels of emissions emitted by cars using respondent's products. The overall impression to this effect is not dispelled by the additional and far less conspicuous claim that Crown with CA-101 "keeps new cars clean."<sup>25</sup>

<sup>24</sup>The representation "Now Crown, with Formula CA-101, gives you \* \* \* cleaner air" in CX 108, reinforces that impression.

<sup>25</sup>The technical meaning of the "keep clean" representation is essentially that the additive by controlling deposit formations will prevent emissions of carbon monoxide and hydrocarbons from increasing (RPF 27, 28). The challenged advertising does not, however, provide the consumer with that explanation. Under the circumstances, the statement is ambiguous and does not effectively modify the claim of "dramatic" reductions.

Crown gasoline with CA-101 will not significantly reduce emissions of carbon monoxide and unburned hydrocarbons in every motor vehicle in which it is used. (Findings 27 to 32, *supra*). This representation is misleading and has the capacity to deceive.

77. The claims "It [Crown with CA-101] cleans your engine and keeps it clean" (CX 108, 108F) and "keeps your engine cleaner" (CX 108L), represent that the additive will clean the engine of any car owner reading or listening to such claims. The claims that Crown gasoline with the additive will keep the engine clean makes no distinction as to the engine components subject to the cleaning process. Respondent has accordingly represented that this product will keep clean all engines and all engine components.

The representation is misleading. Crown gasoline with CA-101 will not clean all engine components (Finding 29, *supra*).

78. The footnote reference in CX 108, 108A, 108F and 108N, "Source: 'A Study on the Effects \* \* \* of Exhaust Emissions' Du Pont Chemical Company"<sup>26</sup>, tied expressly to the claimed reduction of "as much as" 66 percent unburned hydrocarbons and 41 percent carbon monoxide represents that this claim was supported by adequate test data (CX 108, 108A, 108F, 108N). The foregoing reference to the Du Pont Study is not tied to the performance claims challenged by the complaint such as the better mileage claim. With respect to these claims, there is no express representation that they were supported by test data. Rather, the advertisements imply Crown had an adequate, factual or technical basis for making the claim.

79. The technical and scientific data available to and considered by Crown including the test reports furnished by the manufacturer such as in RX 14, do not constitute a reasonable basis for the claim that Crown gasoline with CA-101 is pollution free or that this product will significantly reduce air pollution. The test data submitted to Crown such as CX 110Q indicates to the contrary in the case of the pollution free claim.

The technical data and scientific data available to Crown do not furnish a reasonable basis for the representation that CA-101 will significantly reduce air pollution. The du Pont materials submitted to Crown were not concerned with the environmental impact of the claimed reductions (*e.g.*, RX 14). Accordingly, respondent does not have a reasonable basis for the representation that such reductions are significant in the sense that they will meaningfully reduce the adverse effects of air pollution.

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<sup>26</sup> The du Pont study referred to in Crown's advertising and promotional materials is included in the record as CX 110Q (Tr. 1266-67).

