The Toxicity of the Vapor of Aroclors 1242 and 1254

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The Toxicity of the Vapor of Aroclors 1242 and 1254

Scope

The purpose of this investigation was to determine the effects upon animals of various species, of moderately prolonged intermittent exposure to air bearing the vapor of either Aroclor 1242 or Aroclor 1254. This report deals with the results obtained in experiments in which, for periods ranging up to 4 months, animals were subjected to respiratory exposure to air containing the Aroclors in concentrations that approached saturation and so were greater than any likely to be encountered in industry. The animals failed to exhibit any signs of intoxication during or after the exposure to which they were subjected, and the numbers of deaths which occurred among the exposed animals were comparable to those which resulted from incidental causes in the control groups. Gross and microscopic examination of the tissues of the animals of both the exposed and the control groups disclosed the existence of certain abnormalities which did not differ significantly in their severity or frequency of occurrence among the test and control groups. Other experiments which involve more prolonged exposure on the part of animals to lower concentrations of these materials in air, are now in progress.

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Summary of Results

1. No signs of intoxication were observed in any of the numbers of a group of animals, all of which survived throughout a period of 24 days, on each of 17 of which they were subjected to the inhalation of air bearing 8.6 micrograms of Aroclor 1242 per liter (0.83 ppm) for 7 hours. The viscera of representative animals that were examined microscopically were normal.

2. The incidence of mortality among the animals of all species, excepting the rabbits, in 2 groups that were subjected (7 hours on each of 82 or 83 days over a period of 120 or 121 days) to the inhalation of air bearing, respectively, Aroclor 1242 in the concentration of 6.83 micrograms per liter (0.66 ppm), and Aroclor 1254 in that of 5.40 micrograms per liter (0.41 ppm), was no greater than that among a similarly constituted control group. Two of 5 rabbits died following exposure to the vapor of Aroclor 1242, as did 3 of 7 rabbits exposed to the vapor of Aroclor 1254, whereas only 1 of 5 of the control rabbits died. The survivors, with the exception of the guinea pigs exposed to the vapor of 1254, grew equally as well as did the controls. The average weights of the livers and kidneys (relative to body weights) of the animals exposed to Aroclor 1242, did not differ significantly from those of the

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unexposed group, but the livers of the rats that were exposed to Aroclor 1254 were enlarged. The prothrombin content of the blood of the animals exposed to either Aroclor, as measured by the method of Kato, remained within normal limits.

The deaths that occurred among the test and control animals were the apparent result of an appreciable incidence of pneumonia. The lesions of certain of the animals were those of a frank pneumonia; in others such lesions were not fully developed. Degenerative changes in the viscera were usually found, in varying degrees of severity, in association with the pneumonia, but in certain animals, test and control alike, the degenerative changes were more evident than the pneumonia. The similarity of the lesions in test and control animals, and the lack of characteristic evidence of chemical pneumonitis, lead to the reasonable, but not altogether certain conclusion that all of these fatalities resulted from intercurrent disease among the animals, and not from the effects of their exposure to the Aroclors. For practical purposes, this conclusion is subject to the critique of further experiments involving more prolonged exposure of animals to somewhat lower concentrations.

Properties of the Experimental Materials

Aroclor 1242 is a light straw-colored, mobile liquid with the composition of a chlorinated biphenyl. A letter from

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P.G. Benigus, dated August 30, 1953, states that it contains 42.0 ± 0.5 per cent of chlorine, which corresponds to the presence of 3 chlorine atoms. The positions of the chlorine atoms within the molecule have not been determined. Monsanto Application Bulletin No. P-115, gives its specific gravity at 25°/25° as 1.378 to 1.388, and states that it has a distillation range of 325° to 360°C, a refractive index (D-line at 20°C) of 1.627 to 1.629, a Saybolt Universal viscosity of 100°F of 80 to 93 seconds, and a flash point (Cleveland Open Cup) of 176° - 180°C. Its vapor pressure is about 4 mm at 150°C and about 30 mm at 200°C. Although insoluble in water and glycerine, it is soluble in most organic substances. At 745 mm of mercury and 25°C, the concentration of 1 mg of the vapor of Aroclor 1242 per liter of air is equivalent to 96.9 ppm by volume.

Aroclor 1254, which corresponds to pentachlorobiphenyl, is a light straw-colored, viscous liquid. The positions of the chlorine atoms have not been established. The molecular weight of pentachlorobiphenyl is 326.445, of which 54.3 per cent is chlorine. Benigus (ibid) reported that Aroclor 1254 contained 54.0 ± 0.5 per cent chlorine. Bulletin No. P-115, states that Aroclor 1254 has a specific gravity at 25°/25°C of 1.538 to 1.548, a distillation range of 365° to 390°C, a refractive index (D-line at 20°C) of 1.639 to 1.641, and a Saybolt Universal

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viscosity at 100°F of 1,800 to 2,500 seconds. The vapor pressure at 150°C is about 1.3 mm and at 200°C is about 9 mm. It is soluble in most organic substances, but it is insoluble in water and glycerine.

At 745 mm of mercury and 25°C the concentration of 1 mg of Aroclor 1254 per liter is equivalent to 76.5 ppm by volume.

Experimental Methods

Exposure to the Vapor. In a preliminary experiment with the vapor of Aroclor 1242, a group of animals, consisting of a cat, 6 guinea pigs, 10 mice, 4 rabbits and 10 rats, were confined for 7 hours on each of 5 days per week in a rectangular plywood chamber (volume 600 liters), of which the inner metal lining was coated with a baked chemically resistant plastic, through which was passed a stream of air laden with Aroclor 1242 in a known concentration. The stream of air, conditioned with respect to temperature (75 ± 3°F inside the chamber), dust and humidity, entered the chamber through an "Anemostat," located at the center of its top, at the rate of 500 liters per minute, as measured by an inclined manometer attached to a venturimeter (Figure A). The air was withdrawn by suction from the chamber through an exit tube located on the rear wall near the floor, equidistant from the sides.

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Aroclor 1242 was volatilized from a heated glass well maintained at 132° to 136°C. The air passed over the surface of the liquid before entering the chamber (Figure B).

In a second similar experiment with the same Aroclor, the temperature of the liquid was kept at 100° to 105°C.

While the second experiment with Aroclor 1242 was in progress an experiment involving the vapor of Aroclor 1254 was carried out in a second chamber similar to the first except for the absence of a plastic inner lining. The rate at which air flowed over the liquid Aroclor 1254, which was maintained at 130° - 135°C, was 400 liters per minute.

In order to accustom the animals to the experimental procedure, they were kept in their respective chambers for 7 hours on each of 4 consecutive days during the week prior to the introduction of the Aroclor vapor into the chamber. For purposes of control, a third group of animals was confined throughout a like period before and during the period of the exposure to the Aroclors in another chamber supplied only with conditioned air.

Method for the Determination of Aroclor 1242 or Aroclor 1254 in Air. These materials were determined quantitatively by virtue of the fact that, on thermal decomposition, they yield hydrochloric acid which, with silver nitrate, forms a suspension, the density of which could be measured by means of the Beckman spectrophotometer at 500 mμ.

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On each day, 2 samples of air from each respiratory chamber were collected by passing air at the rate of 1 liter per minute for 15 minutes through a Willson combustion furnace, and then through 2 midget bubblers, in series, each containing 10 ml of 0.1 N sodium hydroxide. A quartz tube (13 mm outside diameter, 7 mm inside diameter and 16.25" in length) contained several strips of folded platinum foil. The middle 9" of the tube was wrapped with a heating unit. The heating unit of the Willson furnace (Figure C) consisted of 20 feet of B. and S. gauge 22 nichrome wire (1 ohm per foot), and was covered with asbestos cement. The sample of air was humidified by a cotton wick saturated with water placed 0.5 inch upstream from the quartz tube. With the furnace maintained at 850°C, the Aroclor was decomposed to free chlorine, which reacted with the moisture to form HCl; this was absorbed in the 0.1 N sodium hydroxide in the midget bubblers (Figure D) equipped with fritted-glass bubblers (Mine Safety Appliance Company No. 43867).

The 0.1 N sodium hydroxide was prepared by dissolving 4.0 g of pellets (ACS specifications 0.01 per cent Cl) in about 50 ml of double distilled water. To this was added 10 g of arsenic trioxide (chloride-free) that had been dissolved in water and filtered through Whatman No. 42 filter paper. The combined solutions were diluted to 1000 milliliters.

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The sample was transferred to a 25 ml graduated cylinder to which 1 drop of a solution of phenolphthalein was added (1 g of phenolphthalein dissolved in 100 ml of CP methanol). The solution was neutralized with 3N nitric acid (190 ml CP concentrated nitric acid diluted to 1000 ml with double-distilled water) and diluted to 23 ml with double-distilled water. One ml of 3N nitric acid was added to obtain a pH of 1. After adding 1 ml of a solution of silver nitrate (3 grams of $AgNO_3$ diluted to 1000 ml with double-distilled water), the suspension was mixed by inversion. After standing 30 minutes, the transmission of wave-length 500 mμ was determined in a 50 mm cell by means of a Beckman spectrophotometer which was set against a corresponding cell containing a reagent blank.

The amount of Aroclor was determined from a standardized curve obtained in a similar manner from known quantities of sodium chloride. A curve relating the transmission at 500 mμ of a suspension resulting from sodium chloride over the range of 5.0 to 120 micrograms per 25 ml of final suspension is shown in Figure E. On the basis of 42.0 per cent of chlorine in Aroclor 1242 and 54.0 per cent in Aroclor 1254, 1 microgram of sodium chloride is equivalent to 1.4442 micrograms of Aroclor 1242 or to 1.1028 micrograms of Aroclor 1254.

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Experimental Results

Aroclor 1242, Experiment No. 1. One cat, 6 guinea pigs, 10 mice, 4 rabbits and 10 rats survived when subjected for 7 hours on each of 17 days over the period of 24 days to the inhalation of air bearing the vapor of Aroclor 1242 in the concentration of 8.6 micrograms per liter (0.83 ppm, Tables 1 and 5). No signs of intoxication were observed.

The weights of the individual animals (cat, guinea pigs, rats and rabbits) have been plotted in Figures 1, 2, 5, 6 and 8. The averages and the ranges of the weights of guinea pigs, mice, rats and rabbits have been plotted at semi-weekly intervals in Figures 3, 4, 7 and 9, respectively.

Despite slight fluctuations in their weight during the period of exposure, all of the animals, except the guinea pigs, gained in weight during the period of exposure (Table 6). The average gains made by the various species, expressed as percentage of the initial weights were: cats, 8.1; mice, 10.3; rabbits, 7.7; and rats, 2.1 The loss in weight on the part of the guinea pigs averaged 2.0 per cent; most of them were gaining weight (Figure 2) at the termination of the period of exposure.

All of the animals were examined post-mortem, and since gross examination of the viscera did not reveal any significant alterations, the tissues of only representative animals

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(1 cat, 4 guinea pigs, 6 mice, 4 rabbits and 6 rats) were sectioned and examined microscopically. No abnormalities were found in the viscera of these animals.

Aroclor 1242, Experiment No. 2 (6.83 γ)/1). The pertinent data relating to the fate of the individual animals in the Experiment No. 2 are presented in Table 2 and summarized in Table 5. This group consisted originally of 1 cat, 6 guinea pigs, 10 mice, 4 rabbits and 10 rats, but a few additional animals were used to replace those which died. One cat, 4 guinea pigs, 6 mice, 2 rabbits and 8 rats survived throughout their exposure, for 7 hours on each of 82 days over a period of 120 days, to air bearing the vapor of Aroclor 1242 in the concentration of 6.83 micrograms per liter (0.66 ppm). Certain animals (2 guinea pigs, 1 mouse, 1 rabbit and 1 rat) were killed after 65 to 68 periods of exposure for examination. In addition, 1 rat and 2 mice survived throughout 23, 41 and 58 periods of exposure, respectively. Seven fatalities occurred as follows: 1 guinea pig after 15 periods of exposure; 3 mice after 24, 41 and 70 periods of exposure, respectively; 2 rabbits after 15 and 64 periods of exposure, respectively; and 1 rat after 56 periods of exposure.

Except in the case of the rabbits, the incidence of mortality among the controls was equally as great (or greater, Tables 4 and 5) as that among the experimental animals. One cat, 3

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mice, 3 guinea pigs, 3 rabbits and 6 rats survived, following their confinement, for 7 hours on each of 84 days over a period of 122 days, in a chamber in which the air, conditioned with respect to dust, humidity and temperature, contained no vapor of either Aroclor. One guinea pig, 1 mouse and 1 rat were killed after 66 (or 68) periods of exposure. Other animals introduced later in the experiment survived throughout the following numbers of periods of exposure, respectively; 2 guinea pigs, 20 and 77; 3 mice, 14, 14 and 19; 1 rabbit, 19; and 1 rat, 44. Eleven fatalities occurred at stated times among the control animals, as follows: 2 guinea pigs, after 7 and 60 periods, respectively; 7 mice after 5, 59, 68, 69, 70, 72 and 82 periods, respectively; and 1 rat and 1 rabbit after 42 and 65 periods, respectively.

No uniform or suggestive signs of intoxication were observed among either the experimental or control groups.

The weights of the individual animals (cat, guinea pigs, rats and rabbits) exposed to Aroclor 1242 are shown in Figures 10, 11, 12, 15, 16 and 18. The average weight, and the greatest and least weights attained by any individual within the groups of guinea pigs, mice, rats and rabbits, are plotted in Figures 13, 14, 17 and 19, respectively. Comparable data on the controls are given in Figures 31 to 41.

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The surviving experimental animals grew equally as well (or better) as the controls (Table 6). During the period of exposure to Aroclor 1242 (6.83 γ)/l), the average gains, expressed as percentages of the initial weights, by the various animals were as follows: cat, 22.2; guinea pigs, 56.4; mice 21.2; rabbits, 50.5; and rats, 17.6. The comparable findings on the controls were: cat, 6.6; guinea pigs, 56.6; mice, 17.4; rabbits, 44.5; and rats, 16.6.

The weights of the livers and kidneys and the relationships of their weights to the body weights (expressed as grams per 100 grams of body weight) of the individual animals that survived following exposure to the vapor of Aroclor 1242, are shown in Table 7, which also gives the corresponding data on the controls. Comparison by the "F" test of the variances of the ratios of the liver or kidneys to the body weights of rats, guinea pigs and rabbits exposed to the vapor of Aroclor 1242 (6.83 γ/l), with those of the controls, revealed no significant differences ($P > 0.05$) except in the case of the livers of the rats. Application of the "t" test to the mean values (Table 8) revealed no significant differences between the test and control groups of guinea pigs, rats and rabbits.

The apparent prothrombin content of the blood, as measured by the method of Kato (Am. J. Clin. Path., 10:147, 1940), of

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certain animals that had been exposed to the vapor of Aroclor 1242, are given in Table 9. Comparable findings on the controls are presented in Table 10. In Table 12 the percentile relationships of the clotting power have been obtained arbitrarily by dividing 100 times the average clotting time of the blood of the control animals by the clotting time of the blood of the experimental animals on the same day. No diminution in the clotting power of the blood, as a measure of the impairment of the function of the liver, was induced by the exposure of the animals to the vapor of Aroclor 1242 when present in the air in the concentration of 6.8 micrograms per liter.

Determinations of the numbers of erythrocytes and leucocytes and of the hemoglobin content in the peripheral blood of individual guinea pigs and rabbits subjected to inhalation of the vapor of Aroclor 1242 in the concentration of 6.8 micrograms per liter, are given in Table 12, which also includes comparable results on control animals. These values have been summarized in Table 13. Application of the "t" test to differences in the mean values (Table 14) for the experimental and control animals yielded border-line evidence of significant differences in the numbers of leucocytes and in the concentration in the hemoglobin in the blood of the guinea pigs, but these were small and of opposite sign (the leucocytes in the blood of the test animals

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were low in number while the hemoglobin content was high), as well as being subject to individual variation, and they cannot be regarded as of physiological significance. Of the 7 animals that died during the second experiment with Aroclor 1242, all but 2 mice were examined post-mortem. The tissues of 2 mice had undergone significant changes, post-mortem, and were not examined microscopically; gross evidence to determine the cause of death was not available. A third mouse (B-244) was examined and found to have a malignant lymphoma that involved the liver, spleen, kidneys and heart, and therefore its death was attributed to natural cause. The cause of the death of the guinea pig was uncertain, but the 2 rabbits and the rat were found to have died of pneumonia, and not, apparently, of chemical pneumonitis.

Generally, the survivors among the various species had normal viscera. However, 2 guinea pigs and 1 rat had degenerative lesions in the liver and kidneys, 1 guinea pig had acute lobular pneumonia, and 1 rat had interstitial pneumonia.

Eleven of the animals (2 guinea pigs, 7 mice, 1 rabbit and 1 rat), that had been confined in conditioned air only, died. The viscera of 6 of these (1 guinea pig, 4 mice and 1 rabbit) were examined microscopically. Each of the animals examined had died with pneumonia, in association with degenerative

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changes of varying severity in the brain, liver and kidneys. Animals of all species that survived were examined and found to have normal viscera, but for scattered pneumonic lesions in certain of the guinea pigs and mice, and for one case of cellulitis in a rabbit.

Aroclor 1254, Experiment No. 1 (5.40 γ/l). The pertinent data relating to the change in weight and the fate of each individual animal during and following prolonged intermittent exposure to the vapor of Aroclor 1254 are given in Table 3 and are summarized in Table 5. The original group consisted of the same numbers and types of animals employed in the other experiments. One cat, 3 guinea pigs, 4 mice, 2 rabbits, and 9 rats survived throughout their exposure, for 7 hours on each of 83 days over a period of 121 days, to air containing Aroclor 1254 in the concentration of 5.40 micrograms per liter (0.41 ppm). Certain other animals (3 guinea pigs, 6 mice, 1 rabbit and 1 rat) were killed for examination after 66 or more (up to 74) periods of exposure. One rabbit, introduced after the experiment had been under way for some time, survived, having undergone 33 periods of exposure. Five animals died during the experiment, 2 guinea pigs after 12 and 17 periods of exposure, respectively, and 3 rabbits after 15, 15 and 20 periods of exposure. Except for the rabbits, the incidence of mortality among the exposed and control groups was comparable (Tables 4 and 5). No signs of intoxication were noted among the experimental animals.

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The weights of the individual animals (cat, guinea pigs, rats and rabbits) are given in Figures 20, 21, 22, 25, 26, 28 and 29, while the average weights of the guinea pigs, mice, rats and rabbits are shown in Figures 23, 24, 27 and 30, respectively.

Except in the case of the guinea pigs and rats, the animals that survived throughout the period of exposure to the vapor of Aroclor 1254 grew equally as well as the controls (Table 6). During the period of exposure the gains made by the animals of various species, expressed as percentages of their initial weights, were as follows: cat, 22.1; guinea pigs, 40.7; mice, 28.9; rabbits, 39.7; and rats, 6.9. The lesser gain by the experimental rats may be explained by the fact that they were initially somewhat heavier. The corresponding values for the control animals have been given previously and are also shown in Table 6.

The weights of the livers and kidneys, and the ratios of these to the body weights, of the animals that survived throughout the exposure are shown in Table 7. Application of the "t" test to the differences in the mean values which characterized the experimental and control animals (Table 6) shows that the weights of the livers of the exposed rats were significantly greater than those of the controls, the ratio of the liver to the body weight of the former being 5.34 g per 100 g of body weight, that of the latter being 4.15 g/100 grams.

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The results on the apparent prothrombin content of the blood of rabbits and of a cat, following exposure to the vapor of Aroclor 1254 (5.40 ✓/l) are given in Table 9. Little or no diminution in the clotting power was induced by exposure to the vapor of Aroclor 1254 (Table 11).

The numbers of the cellular elements and the concentration of the hemoglobin in the peripheral blood of the individual animals subjected to inhalation of the vapor of Aroclor 1254 are shown in Table 12 and are summarized in Table 13. The slight apparent increases in the hemoglobin of the guinea pigs and in the numbers of erythrocytes of the rabbits, while statistically significant (Table 14), cannot be taken seriously as expressions of the effects of the inhalation of Aroclor 1254.

The viscera of 4 of the 5 animals (2 guinea pigs and 3 rabbits) that died after varying periods of exposure to the vapor of Aroclor 1254, exhibited diffuse degenerative changes in the brain, liver and kidneys, in association with pneumonia. Animals that survived, following exposure to the Aroclor, were examined post-mortem, and the viscera from representative animals were examined microscopically. The viscera of the cat and guinea pigs were normal. All of the mice, except one, had normal viscera; the exception (B-237) had slight degenerative lesions in the liver. A rabbit killed 1 day after the 66th

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period of exposure, had degeneration of the liver and kidneys, and pulmonary hyperemia and edema. Otherwise, the rabbits that were examined had essentially normal viscera. All of the rats that were examined had degenerative changes in the liver, and in 5 of the 10, these changes were found to be associated with pneumonia of low grade.

The Aroclors did not appear to act as primary pulmonary irritants. The pneumonia that was observed in both the experimental and control animals had the characteristics of an infectious rather than a chemical process. The toxic degenerative changes which were found in the liver and kidneys of all species of animals, in both experimental and control groups, while not associated with pneumonia in all instances, may well have owed their presence to the intercurrent disease which was characterized, chiefly, in most instances as pneumonia.

Discussion

The probability of the occurrence of the concentrations of vapor maintained in these experiments in actual industrial practice is remote, since these values approach those of atmosphere saturated with the Aroclors. (The significance of particulate matter, in the form of condensed droplets or of products of thermal decomposition, has not been involved in these experiments.)

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Since the animals which were killed for examination after 65 to 68 periods of exposure were found to have degenerative lesions in their viscera which could not, with certainty, be attributed to extra-experimental causes, these experiments were terminated and others have been initiated at about 1/3 to 1/4 the concentration.

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Project No. 47.

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Table 1

The Mortality, Length of Survival, and Changes in Weight of Animals Exposed to the Vapor of Aroclor 1242 in Air

(Experiment No. 1)

Concentration γ/l	Concentration ppm	Duration of Exposure (hours)	Identification Number	Initial Weight (kg)	Change in Weight Expressed as Percentage of Initial Weight: During Period of Exposure	Change in Weight Expressed as Percentage of Initial Weight: After Period of Exposure	Fate	Length of Survival After Final Period of Exposure
8.6	0.83	17 x 7.0	Cat A-446	2.863	+ 8.1	+ 0.2	Survived	Killed 17 days
		17 x 7.0	Guinea Pig B-331	0.595	- 10.4	+ 1.2	Survived	Killed 17 days
		17 x 7.0	Guinea Pig B-332	0.546	- 8.4	- 3.7	Survived	Killed 17 days
		17 x 7.0	Guinea Pig B-333	0.860	+ 3.8	- 2.0	Survived	Killed 3 days
		17 x 7.0	Guinea Pig B-334	0.742	+ 8.4	- 2.8	Survived	Killed 3 days
		17 x 7.0	Guinea Pig B-335	0.463	- 0.4	- 1.5	Survived	Killed 10 days
		17 x 7.0	Guinea Pig B-336	0.685	- 5.0	+ 1.9	Survived	Killed 10 days
		17 x 7.0	Mouse B-251	0.026	+ 3.8	+ 3.8	Survived	Killed 10 days
		17 x 7.0	Mouse B-252	0.028	+ 3.6	- 3.6	Survived	Killed 17 days
		17 x 7.0	Mouse B-253	0.027	0.0	0.0	Survived	Killed 17 days
		17 x 7.0	Mouse B-254	0.026	+ 7.7	- 3.8	Survived	Killed 17 days
		17 x 7.0	Mouse B-255	0.021	+ 19.0	- 4.8	Survived	Killed 3 days
		17 x 7.0	Mouse B-256	0.021	+ 19.0	- 14.3	Survived	Killed 10 days
		17 x 7.0	Mouse B-257	0.021	+ 14.3	- 14.3	Survived	Killed 3 days
		17 x 7.0	Mouse B-258	0.020	- 0.1	0.0	Survived	Killed 10 days
		17 x 7.0	Mouse B-259	0.019	+ 10.5	- 5.3	Survived	Killed 17 days
		17 x 7.0	Mouse B-260	0.023	+ 21.7	- 17.4	Survived	Killed 17 days
		17 x 7.0	Rabbit I-374	3.800	+ 9.0	+ 13.9	Survived	Killed 3 days
		17 x 7.0	Rabbit I-375	4.180	+ 8.4	+ 5.8	Survived	Killed 10 days

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Table 1 - Page 2

Concentration mg/l	Concentration ppm	Duration of Exposure (hours)	Identification Number	Initial Weight (kg)	Change in Weight Expressed as Percentage of Initial Weight: During Period of Exposure	Change in Weight Expressed as Percentage of Initial Weight: After Period of Exposure	Fate	Length of Survival After Final Period of Exposure
8.6	0.83	17 x 7.0	Rabbit I-376	4.225	+ 2.9	+ 1.8	Survived	Killed 17 days
		17 x 7.0	Rabbit I-377	3.400	+ 10.3	+ 6.8	Survived	Killed 24 days
		17 x 7.0	Rat L-436	0.227	+ 1.8	+ 2.6	Survived	Killed 3 days
		17 x 7.0	Rat L-437	0.250	+ 4.4	+ 0.8	Survived	Killed 3 days
		17 x 7.0	Rat L-438	0.254	+ 1.2	- 0.4	Survived	Killed 10 days
		17 x 7.0	Rat L-439	0.207	+ 0.5	- 6.3	Survived	Killed 10 days
		17 x 7.0	Rat L-440	0.228	+ 2.2	+ 0.4	Survived	Killed 17 days
		17 x 7.0	Rat L-441	0.250	+ 0.8	+ 5.6	Survived	Killed 10 days
		17 x 7.0	Rat L-442	0.240	+ 4.6	+ 1.7	Survived	Killed 17 days
		17 x 7.0	Rat L-443	0.230	+ 2.2	- 0.4	Survived	Killed 17 days
		17 x 7.0	Rat L-444	0.238	+ 1.3	+ 3.8	Survived	Killed 17 days
		17 x 7.0	Rat L-445	0.254	+ 2.0	+ 5.9	Survived	Killed 17 days

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Table 2

The Mortality, Length of Survival, and Changes in Weight of Animals Exposed to the Vapor of Aroclor 1242 in Air

(Experiment No. 2)

Concentration γ/l	Concentration ppm	Duration of Exposure (hours)	Identification Number	Initial Weight (kg)	Change in Weight Expressed as Percentage of Initial Weight: During Period of Exposure	Change in Weight Expressed as Percentage of Initial Weight: After Period of Exposure	Fate	Length of Survival After Final Period of Exposure
6.83	0.66	82 x 7.0	Cat A-445	2.271	+ 22.2	-	Survived	Killed 1 day
		82 x 7.0	Guinea Pig B-325	0.417	+ 43.0	-	Survived	Killed 1 day
		15 x 7.0	Guinea Pig B-326	0.305	- 16.6	-	Died	1 day
		82 x 7.0	Guinea Pig B-327	0.386	+106.7	-	Survived	Killed 1 day
		82 x 7.0	Guinea Pig B-328	0.344	+ 57.0	+ 20.1	Survived	Killed 15 days
		66 x 7.0	Guinea Pig B-329	0.379	+ 8.7	-	Survived	Killed 1 day
		82 x 7.0	Guinea Pig B-330	0.483	+ 45.3	- 0.8	Survived	Killed 15 days
		67 x 7.0	Guinea Pig B-419	0.384	+ 77.9	-	Survived	Killed 1 day
		82 x 7.0	Mouse B-241	0.020	+ 50.0	-	Survived	Killed 1 day
		70 x 7.0	Mouse B-242	0.024	- 12.5	-	Died	1 day
		66 x 7.0	Mouse B-243	0.023	+ 4.3	-	Survived	Killed 1 day
		24 x 7.0	Mouse B-244	0.017	- 23.5	-	Died	During 24th period of exposure
		82 x 7.0	Mouse B-245	0.019	+ 31.6	-	Survived	Killed 1 day
		82 x 7.0	Mouse B-246	0.020	+ 10.0	-	Survived	Killed 1 day
		82 x 7.0	Mouse B-247	0.021	+ 14.3	+ 9.5	Survived	Killed 15 days
		41 x 7.0	Mouse B-248	0.019	+ 15.8	-	Died	During 41st period of exposure

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Table 2 - Page 2

Concentration γ/l	Concentration ppm	Duration of Exposure (hours)	Identification Number	Initial Weight (kg)	Change in Weight Expressed as Percentage of Initial Weight: During Period of Exposure	Change in Weight Expressed as Percentage of Initial Weight: After Period of Exposure	Fate	Length of Survival After Final Period of Exposure
6.83	0.66	82 x 7.0	Mouse B-249	0.020	+ 35.0	+ 5.0	Survived	Killed 15 days
		82 x 7.0	Mouse B-250	0.020	+ 25.0	0.0	Survived	Killed 15 days
		58 x 7.0	Mouse B-376	0.024	+ 25.0	-	Survived	Killed 1 day
		41 x 7.0	Mouse B-464	0.024	- 4.2	-	Survived	Killed 1 day
		82 x 7.0	Rabbit I-370	2.672	+ 59.6	-	Survived	Killed 1 day
		82 x 7.0	Rabbit I-371	2.600	+ 51.0	+ 14.4	Survived	Killed 17 days
		64 x 7.0	Rabbit I-372	2.585	+ 20.5	-	Died	1 day
		66 x 7.0	Rabbit I-373	2.490	+ 40.8	-	Survived	Killed 1 day
		15 x 7.0	Rabbit L-964	2.758	+ 2.2	-	Died	During 15th period of exposure
		65 x 7.0	Rat L-526	0.220	+ 9.1	-	Survived	Killed 1 day
		82 x 7.0	Rat L-527	0.219	+ 15.5	-	Survived	Killed 1 day
		82 x 7.0	Rat L-528	0.200	+ 27.0	-	Survived	Killed 1 day
		82 x 7.0	Rat L-529	0.202	+ 15.8	-	Survived	Killed 1 day
		56 x 7.0	Rat L-530	0.213	- 6.1	-	Died	1 day
		82 x 7.0	Rat L-531	0.193	+ 14.0	-	Survived	Killed 1 day
		82 x 7.0	Rat L-532	0.206	+ 14.1	-	Survived	Killed 8 days
		82 x 7.0	Rat L-533	0.219	+ 19.6	+ 3.2	Survived	Killed 15 days
		82 x 7.0	Rat L-534	0.227	+ 17.2	+ 4.8	Survived	Killed 15 days
		82 x 7.0	Rat L-535	0.228	+ 36.4	+ 4.8	Survived	Killed 15 days
		23 x 7.0	Rat L-836	0.207	+ 6.8	-	Survived	Killed 1 day

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Table 3

The Mortality, Length of Survival, and Changes in Weight of Animals Exposed to the Vapor of Aroclor 1254 in Air

(Experiment No. 1)

Concentration mg/l	Concentration ppm	Duration of Exposure (hours)	Identification Number	Initial Weight (kg)	Change in Weight Expressed as Percentage of Initial Weight: During Period of Exposure	Change in Weight Expressed as Percentage of Initial Weight: After Period of Exposure	Fate	Length of Survival After Final Period of Exposure
5.40	0.41	83 x 7.0	Cat A-444	2.320	+ 22.1	-	Survived	Killed 1 day
		83 x 7.0	Guinea Pig B-319	0.442	+ 24.7	+ 3.4	Survived	Killed 16 days
		83 x 7.0	Guinea Pig B-320	0.402	+ 47.3	+ 11.9	Survived	Killed 16 days
		83 x 7.0	Guinea Pig B-321	0.400	+ 70.5	-	Survived	Killed 1 day
		15 x 7.0	Guinea Pig B-322	0.360	- 41.1	-	Died	During 15th period of exposure
		12 x 7.0	Guinea Pig B-323	0.444	- 23.0	-	Died	1 day
		66 x 7.0	Guinea Pig B-324	0.388	+ 31.4	-	Survived	Killed 1 day
		71 x 7.0	Guinea Pig B-415	0.437	+ 5.7	-	Survived	Killed 1 day
		60 x 7.0	Guinea Pig B-418	0.382	+ 64.4	-	Survived	Killed 1 day
		74 x 7.0	Mouse B-231	0.022	+ 36.4	-	Survived	Killed 1 day
		74 x 7.0	Mouse B-232	0.020	+ 35.0	-	Survived	Killed 1 day
		83 x 7.0	Mouse B-233	0.024	+ 37.5	-	Survived	Killed 1 day
		74 x 7.0	Mouse B-234	0.019	+ 31.6	-	Survived	Killed 1 day
		74 x 7.0	Mouse B-235	0.020	+ 30.0	-	Survived	Killed 1 day
		83 x 7.0	Mouse B-236	0.019	+ 26.3	-	Survived	Killed 1 day
		66 x 7.0	Mouse B-237	0.020	+ 35.0	-	Survived	Killed 1 day
		74 x 7.0	Mouse B-238	0.019	+ 21.1	-	Survived	Killed 1 day
		83 x 7.0	Mouse B-239	0.022	+ 9.1	- 4.5	Survived	Killed 13 days

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Table 3 - Page 2

Concentration		Duration of Exposure (hours)	Identification Number	Initial Weight (kg)	Change in Weight Expressed as Percentage of Initial Weight		Fate	Length of Survival After Final Period of Exposure
v/l	ppm				During Period of Exposure	After Period of Exposure		
5.40	0.41	83 x 7.0	Mouse B-240	0.022	+ 27.3	0.0	Survived	Killed 15 days
		66 x 7.0	Rabbit I-362	2.975	+ 37.8	-	Survived	Killed 1 day
		83 x 7.0	Rabbit I-363	2.818	+ 46.1	-	Survived	Killed 1 day
		83 x 7.0	Rabbit I-364	2.993	+ 38.3	+ 1.6	Survived	Killed 16 days
		15 x 7.0	Rabbit I-453	2.324	- 41.3	-	Died	2 days
		15 x 7.0	Rabbit I-587	2.654	- 8.3	-	Died	3 days
		20 x 7.0	Rabbit I-718	2.729	- 2.6	-	Died	1 day
		33 x 7.0	Rabbit I-887	2.100	+ 36.7	-	Survived	Killed 1 day
		83 x 7.0	Rat L-299	0.224	+ 7.6	-	Survived	Killed 1 day
		66 x 7.0	Rat L-517	0.235	- 6.4	-	Survived	Killed 1 day
		83 x 7.0	Rat L-518	0.217	- 1.4	-	Survived	Killed 1 day
		83 x 7.0	Rat L-519	0.224	+ 24.1	-	Survived	Killed 1 day
		83 x 7.0	Rat L-520	0.237	+ 2.1	-	Survived	Killed 1 day
		83 x 7.0	Rat L-521	0.231	- 1.3	-	Survived	Killed 1 day
		83 x 7.0	Rat L-522	0.235	+ 10.6	- 2.1	Survived	Killed 15 days
		83 x 7.0	Rat L-523	0.226	+ 4.0	- 1.3	Survived	Killed 15 days
		83 x 7.0	Rat L-524	0.242	+ 12.8	- 0.8	Survived	Killed 15 days
		83 x 7.0	Rat L-525	0.200	+ 13.5	+ 3.0	Survived	Killed 15 days

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Table 4

The Mortality, Length of Survival, and Changes in Weight of Animals Exposed to Conditioned Air Containing No Vapor of of Aroclor 1242 or Aroclor 1254

(Experiment No. 1)

Duration of Exposure (hours)(1)	Identification Number	Initial Weight (kg.)(1)	Change in Weight Expressed as Percentage of Initial Weight		Fate	Length of Survival After Final Period of Exposure Unless Otherwise Stated
			During Period of Exposure (1)	After Period of Exposure		
84 x 7.0	Cat A-435	2.300	+ 6.6	-	Survived	Killed 1 day
84 x 7.0	Guinea Pig B-313	0.335	+ 95.2	-	Survived	Killed 1 day
66 x 7.0	Guinea Pig B-314	0.413	+ 25.7	-	Survived	Killed 1 day
84 x 7.0	Guinea Pig B-315	0.380	+ 78.7	+ 15.5	Survived	Killed 15 days
7 x 7.0	Guinea Pig B-316	0.384	- 6.3	-	Died	1 day
84 x 7.0	Guinea Pig B-317	0.454	+ 77.1	+ 14.5	Survived	Killed 15 days
60 x 7.0	Guinea Pig B-318	0.414	+ 20.3	-	Died	During 60th period of exposure
77 x 7.0	Guinea Pig B-402	0.469	+ 33.5	-	Survived	Killed 1 day
20 x 7.0	Guinea Pig B-576	0.455	+ 29.2	-	Survived	Killed 1 day
84 x 7.0	Mouse B-221	0.021	+ 14.3	- 14.3	Survived	Killed 15 days
68 x 7.0	Mouse B-222	0.021	+ 23.8	-	Survived	Killed 1 day
68 x 7.0	Mouse B-223	0.022	+ 9.1	-	Died	1 day
72 x 7.0	Mouse B-224	0.021	0.0	-	Died	During 72nd period of exposure
82 x 7.0	Mouse B-225	0.021	0.0	-	Died	During 82nd period of exposure

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Table 4 - Page 2

Duration of Exposure (hours)(1)	Identification Number	Initial Weight (kg)(1)	Change in Weight Expressed as Percentage of Initial Weight		Fate	Length of Survival After Final Period of Exposure Unless Otherwise Stated
			During Period of Exposure(1)	After Period of Exposure		
69 x 7.0	Mouse B-226	0.021	0.0	-	Died	3 days
59 x 7.0	Mouse B-227	0.022	- 40.9	-	Died	1 day
70 x 7.0	Mouse B-228	0.022	- 4.5	-	Died	During 70th period of exposure
84 x 7.0	Mouse B-229	0.023	+ 30.4	0.0	Survived	Killed 3 days
84 x 7.0	Mouse B-230	0.023	0.0	0.0	Survived	Killed 3 days
5 x 7.0	Mouse B-499	0.023	-	-	Died	3 days
14 x 7.0	Mouse B-531	0.023	- 4.3	0.0	Survived	Killed 3 days
14 x 7.0	Mouse B-532	0.013	+ 84.6	0.0	Survived	Killed 3 days
19 x 7.0	Mouse B-533	0.030	- 26.7	0.0	Survived	Killed 3 days
84 x 7.0	Rabbit I-365	3.084	+ 46.1	-	Survived	Killed 1 day
84 x 7.0	Rabbit I-366	3.162	+ 48.6	-	Survived	Killed 1 day
84 x 7.0	Rabbit I-368	2.568	+ 50.7	-18.0	Survived	Killed 15 days
65 x 7.0	Rabbit I-369	3.352	+ 14.0	-	Died	During 65th period of exposure
19 x 7.0	Rabbit I-795	2.213	+ 32.5	-	Survived	Killed 1 day
84 x 7.0	Rat L-507	0.209	+ 14.8	- 1.4	Survived	Killed 15 days
84 x 7.0	Rat L-508	0.231	+ 2.2	+ 3.9	Survived	Killed 15 days
84 x 7.0	Rat L-509	0.212	+ 9.9	+ 3.8	Survived	Killed 15 days
84 x 7.0	Rat L-510	0.225	+ 19.1	- 0.9	Survived	Killed 15 days
42 x 7.0	Rat L-511	0.212	- 34.4	-	Died	During 42nd period of exposure
84 x 7.0	Rat L-512	0.192	+ 27.6	0.0	Survived	Killed 3 days
84 x 7.0	Rat L-513	0.203	+ 26.6	+ 1.5	Survived	Killed 3 days

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Table 4 - Page 3

Duration of Exposure (hours)(1)	Identification Number	Initial Weight (kg)	Change in Weight Expressed as Percentage of Initial Weight		Fate	Length of Survival After Final Period of Exposure Unless otherwise Stated
			During Period of Exposure(1)	After Period of Exposure		
84 x 7.0	Rat L-514	0.195	+ 12.8	0.0	Survived	Killed 3 days
84 x 7.0	Rat L-515	0.217	+ 24.4	0.0	Survived	Killed 3 days
66 x 7.0	Rat L-516	0.210	+ 3.3	-	Survived	Killed 1 day
44 x 7.0	Rat L-748	0.218	+ 22.9	0.0	Survived	Killed 3 days

(1) Computed from time of initial exposure of experimental animals to the vapor of Aroclor; the original group of controls and the original group of experimental animals were confined into conditioned air only, on each of four days during the previous week.

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Table 5

Summary of the Data on Mortality Among Groups of Experimental and Control Animals

Material	Concentration		Duration of Exposure (hours)	Number of Fatalities/Number of Animals Exposed				
	γ/l	ppm		Cats	Guinea Pigs	Mice	Rabbits	Rats
Aroclor 1242	8.60	0.83	17 x 7.0	0/1	0/6	0/10	0/4	0/10
Aroclor 1242	6.83	0.66	82 x 7.0	0/1	1/7 (1) (2)	3/12(1) (3)	2/5 (1)	1/11 (1)(4)
Aroclor 1254	5.40	0.41	83 x 7.0	0/1	2/8 (1) (2) (5)	0/10(1) (6)	3/7(1)(7)	0/10 (1)
Controls	0	0	84 x 7.0	0/1	2/8 (1) (8)	7/14(2) (9)	1/5(10)	1/11(1)(11)

(1) One survivor was exposed on only 65 or 66 days.
(2) One survivor was exposed on only 67 or 68 days.
(3) Two survivors were exposed on only 41 and 58 days, respectively.
(4) One survivor was exposed on only 23 days.
(5) One survivor was exposed on only 71 days.
(6) Five survivors were exposed on only 74 days.
(7) One survivor was exposed on only 33 days.
(8) Two survivors were exposed on only 20 and 77 days, respectively.
(9) Three survivors were exposed on only 14 and 19 days, respectively.
(10) One of the survivors was exposed on only 19 days.
(11) One of the survivors was exposed on only 44 days.

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Table 6

The Average Changes in Weight of Experimental and Control Animals

Survivors						Animals That Died				
Species	n	Average Initial Weight (kg)	Average Weight at Termination of Experiment (kg)	Average Change in Weight During Exposure (1) (kg)	Average Change in Weight Expressed as Percentage of Initial Weight (1)	n	Average Initial Weight (kg)	Average Weight at Termination of Experiment (kg)	Average Change in Weight During Exposure (1) (kg)	Average Change in Weight Expressed as Percentage of Initial Weight (1)
Group Exposed to 8.6% of Aroclor 1242/liter (Exp. No. 1)										
Cat	1	2.863	3.095	+ 0.232	+ 8.1	0	-	-	-	-
Guinea Pigs	6	0.649	0.640	- 0.008	- 2.0	0	-	-	-	-
Mice	10	0.024	0.026	+ 0.002	+ 9.1	0	-	-	-	-
Rabbits	4	3.901	4.193	+ 0.291	+ 7.7	0	-	-	-	-
Rats	10	0.238	0.243	+ 0.005	+ 2.1	0	-	-	-	-
Group Exposed to 6.03% of Aroclor 1242/liter (Exp. No. 2)										
Cat	1	2.271	2.775	+ 0.504	+ 22.2	0	-	-	-	-
Guinea Pigs	6	0.404	0.629	+ 0.225	+ 56.4	1	0.385	0.321	- 0.064	- 16.6
Mice	9	0.021	0.026	+ 0.004	+ 21.2	3	0.020	0.019	- 0.001	- 7.1
Rabbits	3	2.587	3.898	+ 1.311	+ 50.5	2	2.672	2.968	0.297	11.4
Rats	10	0.212	0.250	+ 0.038	+ 17.6	1	0.213	0.200	- 0.013	- 6.1

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Table 6 - Page 2

Species	Survivors n	Average Initial Weight (kg)	Average Weight at Termination of Experiment (kg)	Average Change in Weight During Exposure (1) (kg)	Average Change in Weight Expressed as Percentage of Initial Weight (1)	Animals That Died n	Average Initial Weight (kg)	Average Weight at Termination of Experiment (kg)	Average Change in Weight During Exposure (1) (kg)	Average Change in Weight Expressed as Percentage of Initial Weight (1)
Group Exposed to 5.4% of Aroclor 1254/liter										
Cat	1	2.320	2.833	+ 0.513	+ 22.1	0	-	-	-	-
Guinea Pigs	6	0.409	0.571	+ 0.162	+ 40.7	2	0.402	0.277	- 0.125	- 32.1
Mice	10	0.021	0.027	+ 0.006	+ 28.9	0	-	-	-	-
Rabbits	4	2.722	3.806	+ 1.085	+ 39.7	3	2.569	2.153	- 0.416	- 17.4
Rats	10	0.227	0.242	+ 0.015	+ 6.9	0	-	-	-	-
Group Confined in Conditioned Air Only										
Cat	1	2.388	2.545	+ 0.157	+ 6.6	0	-	-	-	-
Guinea Pigs	6	0.410	0.645	+ 0.227	+ 56.6	2	0.399	0.429	0.030	7.0
Mice	7	0.022	0.024	+ 0.002	+ 17.4	6	0.022	0.020	- 0.001	- 6.1
Rabbits	4	2.764	4.012	+ 1.248	+ 44.5	1	3.352	3.822	0.470	14.0
Rats	10	0.211	0.246	+ 0.034	+ 16.4	1	0.212	0.139	- 0.073	- 34.4

(1) $\left(\sum \left(\frac{\text{Final Weight - Initial Weight x 100\%}}{\text{Initial Weight}} \right) \right)$ / n

GBRN002111

TOWOLDMON0001685

Table 7

The Relationships of the Weights of Certain Organs to the Body Weights of Animals Exposed to the Vapor of Aroclor 1242 or Aroclor 1254

Identification Number	Number of Periods of Exposure	Body Weight (g)	Liver		Kidneys	
			g	Ratio of Weight of Organ x 100 to Body Weight	g	Ratio of Weight of Organ x 100 to Body Weight
Aroclor 1242 6.83 Micrograms/liter						
Cat A-445	82	2775	92.0	3.30	17.5	0.631
Guinea Pig B-325	82	639	23.9	3.74	3.4	0.532
Guinea Pig B-327	82	798	31.4	3.93	4.9	0.614
Guinea Pig B-328	82	609	31.0	5.09	6.0	0.985
Guinea Pig B-329	66	412	22.0	5.34	4.5	1.092
Guinea Pig B-330	82	698	35.0	5.01	6.2	0.888
Guinea Pig B-419	67	683	34.0	4.98	4.9	0.717
Average	77	640	29.6	4.61	5.0	0.805
Rabbit I-370	82	4265	112.0	2.63	14.5	0.340
Rabbit I-371	82	4300	144.0	3.35	21.5	0.500
Rabbit I-373	66	3505	110.0	3.14	19.8	0.565
Average	77	4023	122.0	3.04	18.6	0.468

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Table 7 - Page 2

Identification Number	Number of Periods of Exposure	Body Weight (g)	Liver		Kidneys	
			g	Ratio of Weight of Organ x 100 to Body Weight	g	Ratio of Weight of Organ x 100 to Body Weight
Aroclor 1242 6.83 Micrograms/liter						
Rat L-526	65	240	12.5	5.21	2.01	0.833
Rat L-527	82	253	11.4	4.51	1.75	0.692
Rat L-528	82	254	11.0	4.33	1.81	0.709
Rat L-529	82	202	8.7	4.31	1.85	0.916
Rat L-531	82	220	10.0	4.55	1.60	0.727
Rat L-533	82	269	10.5	3.90	1.81	0.669
Rat L-534	82	277	14.0	5.05	2.20	0.794
Rat L-535	82	228	14.9	6.54	2.30	1.009
Rat L-836	23	221	7.5	3.39	1.34	0.606
Average	74	240	11.2	4.64	1.85	0.773
Aroclor 1254 5.40 Micrograms/liter						
Cat A-444	83	2833	93.3	3.29	16.0	0.565
Guinea Pig B-319	83	566	22.9	4.05	4.6	0.813
Guinea Pig B-320	83	640	27.3	4.27	5.2	0.813
Guinea Pig B-321	83	682	26.3	3.86	4.2	0.616
Guinea Pig B-324	66	510	26.0	5.10	4.8	0.941
Guinea Pig B-415	71	462	23.2	5.02	4.0	0.866

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Table 7 - Page 3

Identification Number	Number of Periods of Exposure	Body Weight (g)	Liver		Kidneys	
			g	Ratio of Weight of Organ x 100 to Body Weight	g	Ratio of Weight of Organ x 100 to Body Weight
Aroclor 1254 5.40 Micrograms/liter						
Guinea Pig B-418	68	628	29.7	4.73	5.0	0.796
Average	76	591	25.9	4.51	4.6	0.808
Rabbit I-362	66	2975	184.0	6.18	24.0	0.807
Rabbit I-363	83	4116	118.0	2.84	15.1	0.367
Rabbit I-364	83	4185	103.0	2.46	14.5	0.346
Rabbit I-887	33	2870	75.1	2.62	9.6	0.334
Average	66	3537	120.0	3.53	15.8	0.464
Rat L-299	83	241	13.0	5.39	2.0	0.830
Rat L-517	66	220	11.4	5.18	1.4	0.636
Rat L-518	83	214	10.7	5.00	1.6	0.748
Rat L-519	83	278	16.6	5.97	2.1	0.755
Rat L-520	83	242	17.2	7.11	2.2	0.909
Rat L-521	83	228	12.2	5.35	3.5	1.535
Rat L-522	83	255	10.6	4.16	1.9	0.745
Rat L-523	83	232	11.4	4.91	1.8	0.776
Rat L-524	83	242	13.1	5.41	2.2	0.909
Rat L-525	83	233	11.4	4.89	2.0	0.858
Average	81	239	12.8	5.34	2.1	0.770
Controls						
Cat A-435	84	2545	48.5	1.91	14.4	0.566

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Table 7 - Page 4

Identification Number	Number of Periods of Exposure	Body Weight (g)	Liver		Kidneys	
			g	Ratio of Weight of Organ x 100 to Body Weight	g	Ratio of Weight of Organ x 100 to Body Weight
Controls						
Guinea Pig B-313	84	654	25.1	3.84	4.6	0.703
Guinea Pig B-314	66	519	18.2	3.51	4.6	0.886
Guinea Pig B-315	84	738	36.4	4.93	4.0	0.542
Guinea Pig B-317	84	870	40.8	4.69	5.7	0.655
Guinea Pig B-402	77	626	29.7	4.74	4.9	0.783
Guinea Pig B-576	20	508	31.3	5.32	4.8	0.816
Average	69	666	30.3	4.51	4.8	0.731
Rabbit I-365	84	4505	121.0	2.75	18.8	0.417
Rabbit I-366	84	5000	104.0	2.08	20.3	0.406
Rabbit I-368	84	3490	95.5	2.74	21.8	0.625
Rabbit I-975	19	2973	82.7	2.88	16.9	0.568
Average	68	3223	102.3	2.61	19.5	0.504
Rat L-507	84	203	8.2	4.04	1.7	0.837
Rat L-508	84	245	8.4	3.43	1.7	0.694
Rat L-509	84	241	9.5	3.94	2.3	0.954
Rat L-510	84	266	10.5	3.95	1.9	0.714

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Table 7 - Page 5

Identification Number	Number of Periods of Exposure	Body Weight (g)	Liver		Kidneys	
			g	Ratio of Weight of Organ x 100 to Body Weight	g	Ratio of Weight of Organ x 100 to Body Weight
Controls						
Rat L-512	84	245	8.1	3.31	2.2	0.898
Rat L-513	84	257	10.2	3.97	2.4	0.934
Rat L-514	84	220	12.9	5.86	2.1	0.954
Rat L-515	84	270	9.9	3.67	1.9	0.704
Rat L-516	66	217	9.2	4.24	1.3	0.599
Rat L-748	40	268	13.5	5.04	2.1	0.784
Average	78	243	9.0	4.15	2.0	0.807

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Table 8

Summary of the Data on the Relationship of the Weight of the Liver or the Kidneys to the Body Weight of Animals Exposed to the Vapor of Aroclor 1242 or Aroclor 1254

Aroclor	Organ	Species	n	Average Organ Weight (g)	Average Body Weight (g)	Ratio of Weight of Organ x 100 to Body Weight	t	P
1242	Liver	Rat	9	11.2	240	4.64	1.2381	0.20-0.30
1242	Liver	Guinea Pig	6	29.6	640	4.68	0.4291	>0.50
1242	Liver	Rabbit	3	122.0	4023	3.04	1.5085	0.10-0.20
1254	Liver	Rat	10	12.8	239	5.34	3.3992	<0.01
1254	Liver	Guinea Pig	6	25.9	581	4.51	0.0000	>0.50
1254	Liver	Rabbit	4	120.0	3537	3.53	1.0122	>0.50
1242	Kidney	Rat	9	1.85	240	0.773	0.5842	>0.50
1242	Kidney	Guinea Pig	6	5.0	640	0.805	0.7257	0.40-0.50
1242	Kidney	Rabbit	3	18.6	4023	0.468	0.4177	>0.50
1254	Kidney	Rat	10	2.1	239	0.770	0.4199	>0.50
1254	Kidney	Guinea Pig	6	4.6	581	0.808	0.5411	>0.50
1254	Kidney	Rabbit	4	15.8	3537	0.464	0.3163	>0.50
1254	Liver	Rat	10	9.0	213	4.15	-	-
1254	Liver	Guinea Pig	6	30.3	266	4.51	-	-
1254	Liver	Rabbit	4	102.3	3993	2.61	-	-
1254	Kidney	Rat	10	2.0	213	0.807	-	-
1254	Kidney	Guinea Pig	6	4.8	666	0.731	-	-
1254	Kidney	Rabbit	4	19.5	3993	0.504	-	-

$$t = \bar{x}_1 - \bar{x}_2 \sqrt{\frac{n_1 n_2 (n_1 + n_2 - 2)}{(n_1 + n_2)(Sx_1^2 + Sx_2^2)}} \; ; \; df = n_1 + n_2 - 2$$

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TOWOLDMON0001691

Table 9

The "Prothrombin Time" (Method of Kato) of the Blood of Animals following Their Exposure to the Vapor of Aroclor 1242 or Aroclor 1254 in Air

Date	Clotting Time, Seconds				
	Experiment No. 2 Aroclor 1242 - 6.83 mg/l				
		Rabbits			
	Cat A-445	I-370	I-371	I-372	I-373
9/11/53	20.00	19.00	19.50	19.50	18.50
9/12/53	18.50	17.00	17.00	18.00	16.50
9/26/53	18.00	13.50	15.00	13.50	13.50
10/24/53	16.50	15.00	15.00	14.50	14.00
11/14/53	17.00	14.00	13.50	13.50	14.00
12/5/53	19.00	16.50	15.00	16.00	16.75
1/12/54	17.00	16.00	17.00		16.75
1/26/54			15.00		

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Date	Clotting Time, Seconds							
	Experiment No. 1 Aroclor 1254 - 5.40 γ/1							
		Rabbits						
	Cat A-444	I-362	I-363	I-364	I-453	I-587	I-718	I-087
9/11/53	20.00	17.00	18.00	17.00	17.00			
9/12/53	20.00	16.00	16.50	18.00	17.00			
9/26/53	16.50	16.00	16.00	15.00	18.25			
10/24/53	16.50	15.00	14.00	15.00		14.00		
11/14/53	17.00	15.00	14.00	13.50			14.00	16.50
12/5/53	20.00	17.25	16.50	16.50				
12/16/53								
1/12/54								15.00
1/13/54	20.00		15.00					
1/26/54				15.00				

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TOWOLDMON0001693

Table 10

The "Prothrombin Time" (Method of Keto) of the Blood of Animals Following Their Confinement in Cages Supplied with Conditioned Air Containing No Vapor of Aroclor 1242 or Aroclor 1254

	Clotting Time, Seconds						
		Rabbits					
Date	Cat A-435	I-365	I-366	I-360	I-369	I-975	Average
9/11/53	20.00	16.00	16.00	16.00	18.50		16.63
9/12/53	20.00	16.00	16.50	16.00	16.25		16.19
9/26/53	16.25	13.25	13.50	15.50	14.75		14.25
10/24/53	13.75	13.50	14.50	14.50	15.00		14.38
11/14/53	17.25	14.50	13.00	13.50	13.00		13.50
12/5/53	13.50	15.50	16.25	15.75	17.00		16.13
1/12/54	19.75	16.75	15.50	17.75		17.25	16.81
1/13/54	18.00	15.50	16.00	14.25		14.00	14.94
1/26/54				15.00			15.00

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Table 11

The Effect of the Exposure of Cats and Rabbits to the Vapor of Aroclor 1242 or Aroclor 1254 in Air for 7 Hours per Day on 5 Days per Week Over a Period of Several Months, Upon the Apparent Prothrombin Content (Method of Kato) of their Blood

Relation of "Prothrombin Time" of Control and Exposed Animals Expressed Arbitrarily in Terms of Percentage Change in Clotting Time of Blood 100 x Clotting Time of Blood of Control Animals / Clotting Time of Blood of Exposed Animals						Time of Sampling in Relation to Period of Exposure	
						Days Before First Period	Serial Number of Period After Which Blood Was Drawn
Experiment No. 2 Aroclor 1242 - 6.83 γ/l							
	Rabbits						
Cat A-445	I-370	I-371	I-372	I-373	Average		
100.0	87.5	85.3	85.3	89.9	89.6	3	
90.3	95.2	95.2	89.9	98.1	93.8	2	
113.6	105.6	95.0	105.6	105.6	105.1		10
101.5	95.9	95.9	99.2	102.7	99.0		30
97.4	96.4	100.0	100.0	96.4	98.0		45
116.2	97.8	107.5	100.8	96.3	103.7		59
	105.1	98.9		100.4	101.5		82
		100.0			100.0		(1)

(1) Determination made 15 days after 82nd period of exposure.

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Table 11 - Page 2

Relation of "Prothrombin Time" of Control and Exposed Animals Expressed Arbitrarily in Terms of Percentage Change in Clotting Time of Blood

$$\frac{100 \times \text{Clotting Time of Blood of Control Animals}}{\text{Clotting Time of Blood of Exposed Animals}}$$

Experiment No. 1 Aroclor 1254 - 5.40 mg/l

Cat A-444	Rabbits I-362	I-363	I-364	I-453	I-587	I-718	I-887	Average	Time of Sampling in Relation to Period of Exposure: Days Before First Period	Serial Number of Period After Which Blood Was Drawn
100.0	97.8	92.3	97.8	97.8				97.1	3	
100.0	101.2	98.1	89.9	95.2				96.9	2	
							81.8	81.8		9
98.5	89.1	89.1	95.0	78.1				90.0		10
					102.7	96.4		99.6		15
113.6	95.9	102.7	95.9					102.0		30
							112.1	112.1		32
101.5	90.0	96.4	100.0					97.0		45
92.5	93.5	97.8	97.8					95.4		59
90.0		100.4						95.2		83
			100.0					100.0		(2)

(2) Determination made 14 days after 83rd period of exposure.

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Table 12

The Effects of the Intermittent Inhalation of the Vapor of Aroclor 1242 or Aroclor 1254, or of Conditioned Air, Upon the Numbers of Erythrocytes and Leucocytes and Upon the Concentration of Hemoglobin in the Peripheral Blood of Animals

Experiment No. 2 Aroclor 1242 - 6.83 γ/l: 7 hours/day

Identification Number	Dates of First and Last Period of Exposure	Date of Determination	Hemoglobin g/100 ml	Erythrocytes (Thousands) per mm^3	Leucocytes per mm^3
Cat A-445	9/14/53	9/17/53	12.4	8,050	20,950
		10/28/53	10.3	7,180	12,700
		12/22/53	10.0	7,180	15,050
	1/11/54	Average	10.9	7,470	16,218
Guinea Pig B-325	9/14/53	9/18/53	13.8	5,480	16,350
		10/29/53	15.4	6,540	10,300
		12/21/53	14.2	6,040	11,200
	1/11/54	Average	14.5	6,010	12,617
Guinea Pig B-326	9/14/53	9/16/53	15.8	5,830	16,750
	10/2/53				
Guinea Pig B-327	9/14/53	9/16/53	14.6	5,260	6,400
		10/29/53	15.8	6,620	11,300
		12/21/53	15.8	6,030	8,200
	1/11/54	Average	15.4	5,970	8,633

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Experiment No. 2 Aroclor 1242 - 6.83 γ/l: 7 hours/day

Identification Number	Dates of First and Last Period of Exposure	Date of Determination	Hemoglobin g/100 ml	Erythrocytes (Thousands) per mm³	Leucocytes per mm³
Guinea Pig B-328	9/14/53	9/16/53	12.7	5,290	10,300
		10/29/53	13.1	5,550	8,150
		12/5/53	13.4	5,620	13,850
	1/11/54	Average	13.1	5,487	10,767
Guinea Pig B-329	9/14/53	9/16/53	15.0	5,150	5,700
		10/29/53	13.1	5,500	9,150
		12/12/53	14.2	5,420	11,950
	12/15/53	Average	14.1	5,357	5,600
Guinea Pig B-330	9/14/53	9/10/53	12.0	4,930	6,500
		10/29/53	15.4	6,370	8,300
		12/21/53	13.8	5,740	10,000
	1/11/54	Average	13.7	5,680	8,267
Guinea Pig B-419	10/5/53	12/21/53	14.2	5,570	8,150
	1/11/54				
Rabbit I-370	9/14/53	9/16/53	11.6	5,780	9,400
		10/28/53	13.4	6,900	15,400
		12/22/53	12.7	5,590	10,600
	1/11/54	Average	12.6	6,090	11,800

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Experiment No. 2 Aroclor 1242 - 6.83 V/1: 7 hours/day

Identification Number	Dates of First and Last Period of Exposure	Date of Determination	Hemoglobin g/100 ml	Erythrocytes (Thousands) per mm³	Leucocytes per mm³
Rabbit I-371	9/14/53	9/16/53	12.0	5,900	12,250
		10/28/53	11.4	5,940	12,300
		12/22/53	12.4	6,030	7,350
	1/11/54	Average	11.9	5,957	10,633
Rabbit I-372	9/14/53	9/16/53	11.6	5,970	8,950
		10/20/53	13.1	7,090	14,000
	12/11/53	Average	12.4	6,530	11,475
Rabbit I-373	9/14/53	9/16/53	11.6	5,540	8,150
		10/28/53	11.6	6,040	10,450
		12/9/53	13.1	5,140	8,600
	12/15/53	Average	12.1	5,573	9,067
Rabbit I-964	12/15/53	12/22/53	11.6	6,290	5,800
	1/7/54				

Experiment No. 1 Aroclor 1254 - 5.40 V/1: 7 hours/day

Cat A-444	9/14/53	9/18/53	11.6	9,540	25,900

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Table 12 - Page 4

Experiment No. 1 Aroclor 1254 - 5.40 γ/1: 7 hours/day

Identification Number	Dates of First and Last Period of Exposure	Date of Determination	Hemoglobin g/100 ml.	Erythrocytes (Thousands) per mm^3	Leucocytes per mm^3
Cat A-444		10/30/53	12.0	8,390	25,100
		12/23/53	13.4	7,550	26,350
	1/12/54				
		Average	12.3	8,493	25,783
Guinea Pig B-319	9/14/53				
		9/21/53	15.0	5,780	16,000
		11/2/53	15.0	5,970	9,550
		12/22/53	13.4	5,580	11,350
	1/12/54				
		Average	14.5	5,777	12,300
Guinea Pig B-320	9/14/53				
		9/21/53	14.6	5,760	12,100
		11/2/53	15.8	5,690	8,550
		12/22/53	13.8	5,310	16,550
	1/12/54				
		Average	14.7	5,587	12,400
Guinea Pig B-321	9/14/53				
		9/21/53	14.6	5,450	6,350
		11/2/53	14.6	6,190	16,650
		12/22/53	15.4	6,170	12,100
	1/12/54				
		Average	14.9	5,937	11,700
Guinea Pig B-322	9/14/53	9/21/53	13.4	5,760	14,950
	10/2/53				
Guinea Pig B-323	9/14/53	9/21/53	15.0	6,270	8,700
	9/29/53				

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Experiment No. 1 Aroclor 1254 - 5.40 Y/1: 7 hours/day

Identification Number	Dates of First and Last Period of Exposure	Date of Determination	Hemoglobin g/100 ml	Erythrocytes (Thousands) per mm^3	Leucocytes per mm^3
Guinea Pig B-324	9/14/53	9/21/53	15.0	5,880	14,500
		11/2/53	13.8	6,200	16,800
		12/12/53	14.2	6,110	15,200
	12/15/53	Average	14.3	6,063	15,167
Guinea Pig B-415	9/30/53	11/2/53	14.2	5,930	22,900
		12/22/53	14.6	5,710	12,900
	1/12/54	Average	14.4	5,820	17,900
Guinea Pig B-418	10/5/53	11/2/53	14.6	6,330	10,000
		12/22/53	14.2	5,410	10,600
	1/12/54	Average	14.4	5,870	10,300
Rabbit I-362	9/14/53	9/16/53	14.2	6,850	15,300
		10/30/53	13.4	6,020	12,400
		12/9/53	13.1	5,960	13,100
	12/15/53	Average	13.6	6,277	13,600
Rabbit I-363	9/14/53	9/18/53	13.4	6,770	7,400
		10/30/53	11.6	5,960	10,450
		12/23/53	11.6	5,470	12,500
	1/12/54	Average	12.2	6,067	10,117

GBRND02127

TOWOLDMON0001701

Experiment No. 1 Aroclor 1254 - 5.40γ/l: 7 hours/day

Identification Number	Dates of First and Last Period of Exposure	Date of Determination	Hemoglobin g/100 ml	Erythrocytes (Thousands) per mm^3	Leucocytes per mm^3
Rabbit I-364	9/14/53	9/18/53	13.4	6,430	6,050
		10/30/53	12.4	6,890	13,800
		12/23/53	12.4	6,300	10,000
	1/12/54				
		Average	12.7	6,540	9,950
Rabbit I-453	9/14/53	9/18/53	15.0	6,900	11,050
	10/2/53				
Rabbit I-587	10/5/53				
	10/23/53				
Rabbit I-718	10/26/53	10/30/53	11.6	6,500	10,850
	11/20/53				
Rabbit I-887	11/23/53	12/23/53	13.8	6,630	9,300
	1/12/54				
Conditioned Air					
Cat A-435	9/8/53	9/22/53	10.0	7,970	25,050
		11/3/53	10.6	7,140	14,450
		12/23/53	11.0	7,200	12,350
	1/13/54				
		Average	10.5	7,437	17,283

GBRND02128

TOWOLDMON0001702

Conditioned Air

Identification Number	Dates of First and Last Period of Exposure	Date of Determination	Hemoglobin g/100 ml	Erythrocytes (Thousands) per mm^3	Leucocytes per mm^3
Guinea Pig B-313	9/8/53				
		9/23/53	13.4	5,490	11,250
		11/4/53	13.8	6,080	15,050
		12/23/53	15.4	5,870	11,150
	1/13/54				
		Average	14.2	5,813	12,483
Guinea Pig B-314	9/8/53				
		9/23/53	12.0	5,290	12,150
		11/4/53	14.2	5,780	14,800
		12/12/53	---	5,230	19,250
	12/15/54				
		Average	13.1	5,433	15,400
Guinea Pig B-315	9/8/53				
		9/23/53	13.8	5,790	14,950
		11/4/53	14.6	5,510	17,050
		12/23/53	14.2	5,540	17,050
	1/13/54				
		Average	14.2	5,613	15,867
Guinea Pig B-316	9/8/53 9/22/53				
Guinea Pig B-317	9/8/53				
		9/23/53	13.4	5,970	6,000
		11/4/53	15.0	6,980	5,450
		12/23/53	15.0	6,590	10,450
	1/13/54				
		Average	14.5	6,513	7,300

GBRND02129

TOWOLDMON0001703

Conditioned Air

Identification Number	Dates of First and Last Period of Exposure	Date of Determination	Hemoglobin g/100 ml.	Erythrocytes (Thousands) per mm^3	Leucocytes per mm^3
Guinea Pig B-318	9/8/53	9/23/53	13.4	5,520	9,900
		11/4/53	12.7	5,320	17,000
	12/4/53	Average	13.1	5,420	13,450
Guinea Pig B-402	9/23/53	9/23/53	13.1	5,320	10,100
		11/4/53	13.8	5,210	10,650
		12/23/53	15.4	5,830	12,150
	1/13/54	Average	14.1	5,453	10,967
Guinea Pig B-576	12/14/53	12/23/53	14.2	5,860	9,400
	1/13/54				
Rabbit I-365	9/8/53	9/22/53	11.4	5,900	8,900
		11/3/53	12.4	5,800	8,100
		12/23/53	13.4	6,200	11,450
	1/13/54	Average	12.4	5,967	9,483
Rabbit I-366	9/8/53	9/22/53	11.4	5,860	16,400
		11/3/53	11.4	5,760	16,250
		12/23/53	12.7	5,280	13,750
	1/13/54	Average	11.6	5,633	15,467

GBRN002130

TOWOLDMON0001704

Conditioned Air

Identification Number	Dates of First and Last Period of Exposure	Date of Determination	Hemoglobin g/100 ml	Erythrocytes (Thousands) per mm³	Leucocytes per mm³
Rabbit I-368	9/8/53	9/22/53	11.4	5,630	9,100
		11/3/53	11.4	5,060	10,900
		12/23/53	12.4	6,240	13,100
	1/13/54	Average	11.7	5,643	11,033
Rabbit I-369	9/8/53	9/22/53	12.4	6,490	11,700
		11/3/53	12.0	5,900	9,100
		12/9/53	11.6	5,260	16,300
	12/14/54	Average	12.0	5,883	12,367
Rabbit I-975	12/15/53	12/23/53	13.1	6,420	9,600
	1/13/54				

GBRN002131

TOWOLDMON0001705

Table 13

The Average Numbers of Erythrocytes and Leucocytes and the Average Concentration of Hemoglobin in the Peripheral Blood of Experimental and Control Animals

Species of Animals	Erythrocytes: Thousands per mm^3		Leucocytes: per mm^3		Hemoglobin: g/100 ml	
	Average $\bar{x}$	n	Average $\bar{x}$	n	Average $\bar{x}$	n
Experiment No. 2 Aroclor 1242 - 6.83 γ/l.: 7 hours/day						
Guinea Pigs	5,701	7	10,112 (1)	7	14.4 (2)	7
Rabbits	6,088	5	9,755	5	12.1	5
Experiment No. 1 Aroclor 1254 - 5.40 γ/l.: 7 hours/day						
Guinea Pigs	5,886	8	12,927	8	14.5 (2)	8
Rabbits	6,486 (2)	6	10,811	6	13.2	6
Controls Exposed to Conditioned Air						
Guinea Pigs	5,729	7	12,124	7	13.9	7
Rabbits	5,909	5	11,590	5	12.2	5

(1) Value significantly less than that obtained on controls.
(2) Value significantly greater than that obtained on controls.

GBRND02132

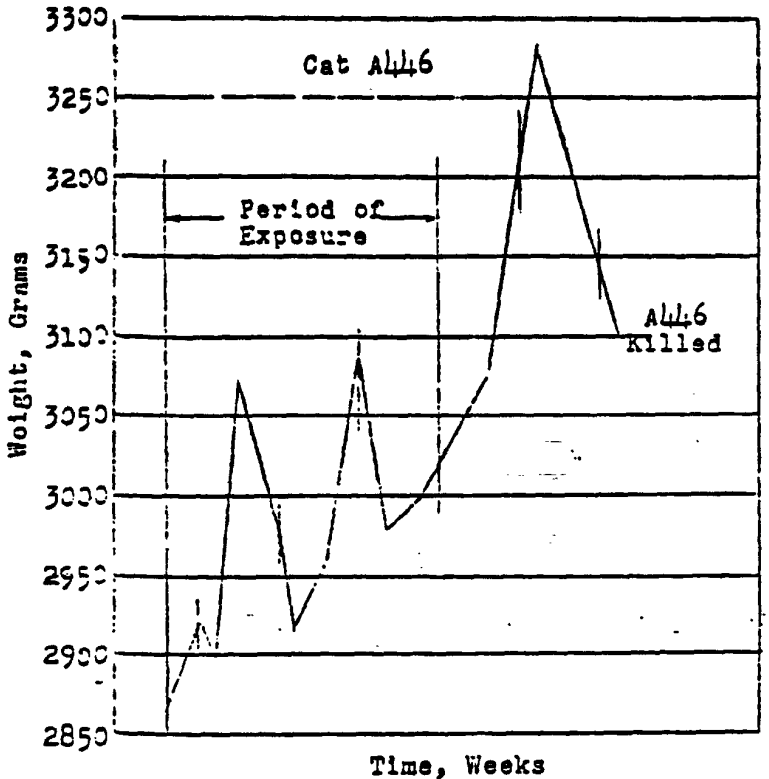
TOWOLDMON0001706

Table 14

Application of the "t" Test to the Hematological Data Obtained in Observations on Exposed and Control Animals

Species of Animals	Erythrocytes thousands/mm³			Leucocytes Per mm³			Hemoglobin G/100 ml		
	df	t	P	df	t	P	df	t	P
Experiment No. 2 Aroclor 1242 - 6.83 γ/l; 7 hours/day									
Guinea Pigs	12	0.1604	> 0.50	12	2.7894	0.01-0.02	12	3.5496	<0.01
Rabbits	8	0.8298	0.40-0.50	8	1.4371	0.10-0.20	8	0.3086	>0.50
Experiment No. 1 Aroclor 1254 - 5.40 γ/l; 7 hours/day									
Guinea Pigs	13	0.9924	0.30-0.40	13	0.5117	>0.50	13	2.1731	0.02-0.05
Rabbits	9	3.1443	0.01-0.02	9	0.6457	>0.50	9	1.6423	0.20-0.10

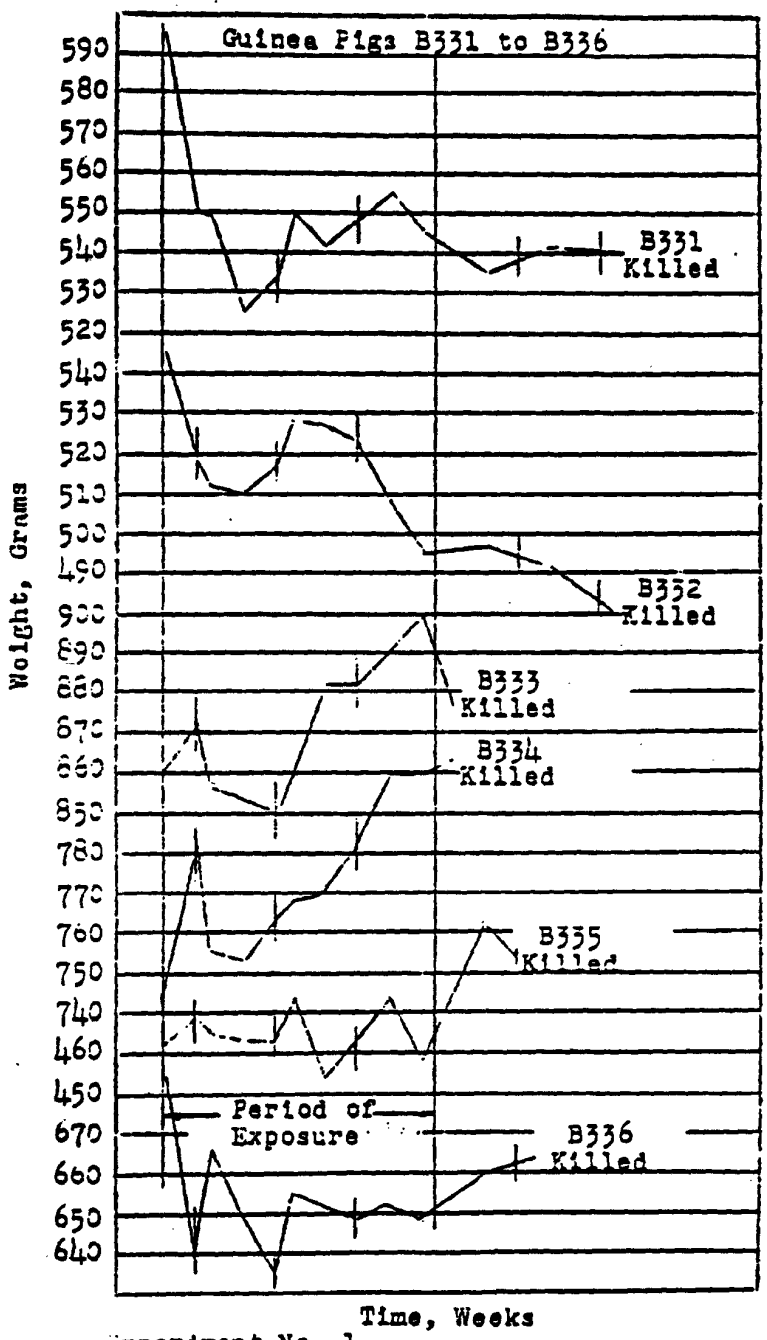
$$t = \bar{x}_1 - \bar{x}_2 \sqrt{\frac{n_1 n_2 (n_1 + n_2 - 2)}{(n_1 + n_2)(Sx_1^2 + Sx_2^2)}}; \quad df = n_1 + n_2 - 2$$



Experiment No. 1
8.6 Micrograms of Aroclor 1242/liter
Figure 1

GBRN002133

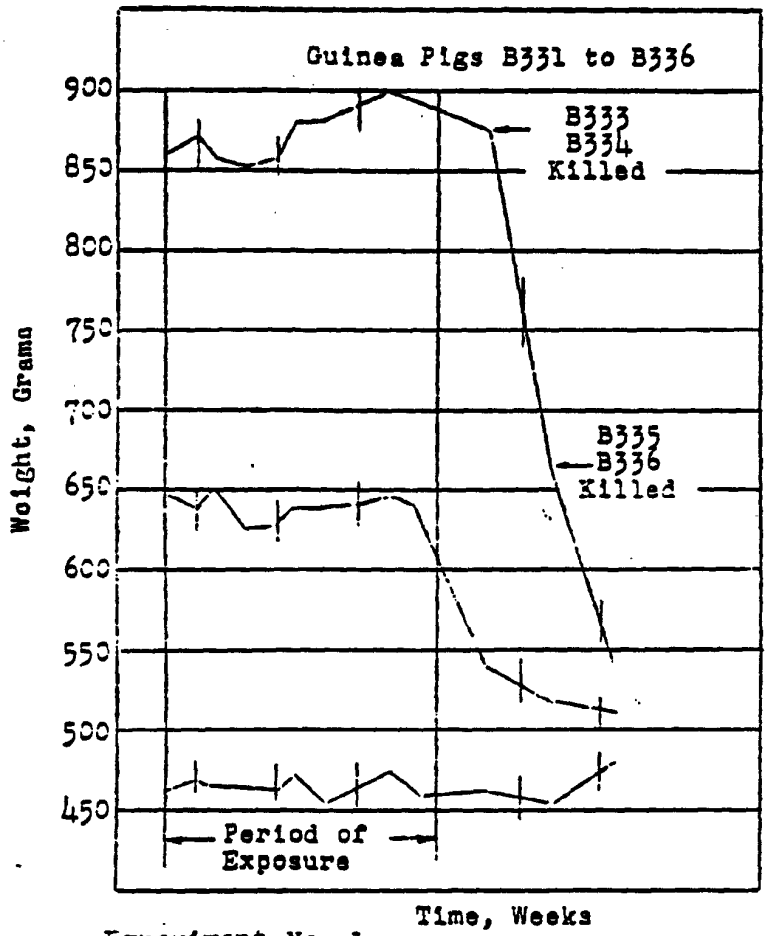
TOWOLDMON0001707



Experiment No. 1
8.6 Micrograms of Aroclor 1242/liter
Figure 2

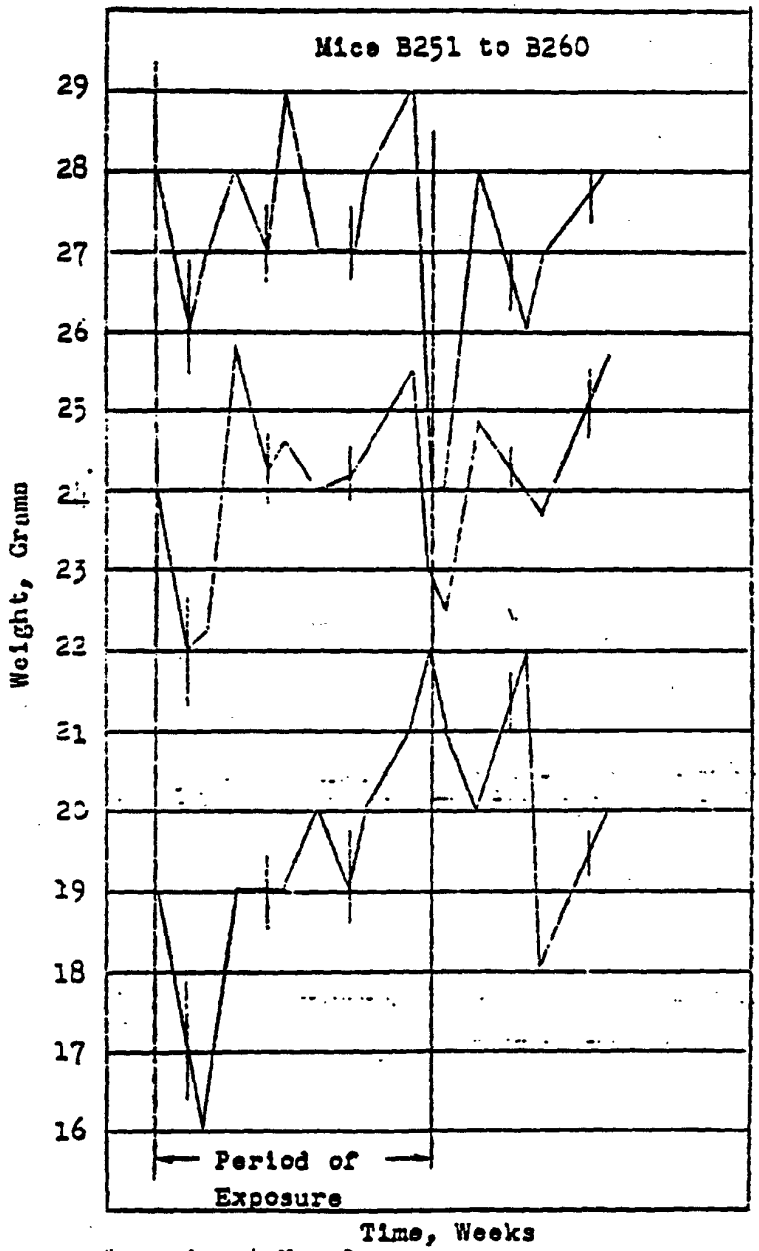
GBRN002134

TOWOLDMON0001708



Experiment No. 1
8.6 Micrograms of Aroclor 1242/liter
Figure 3

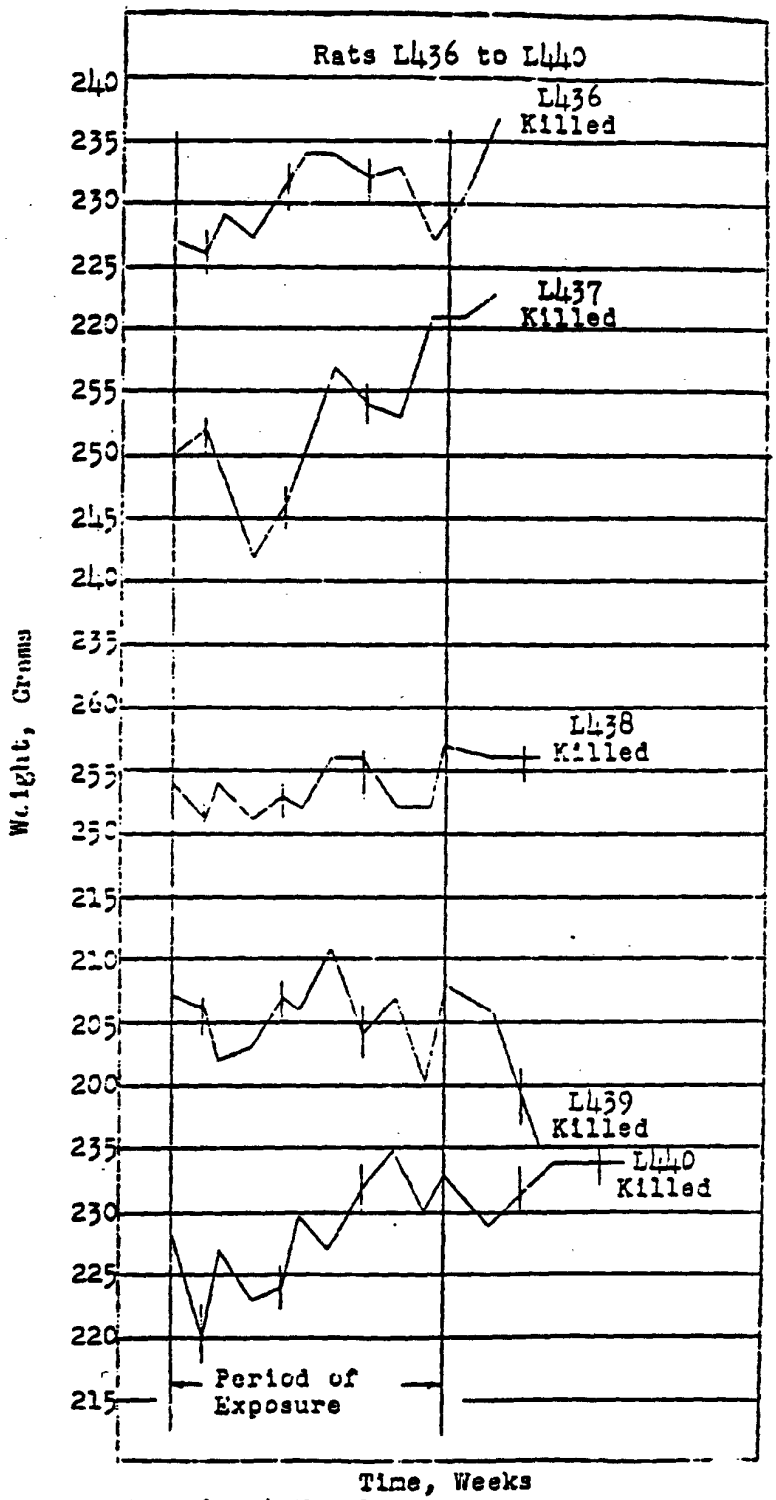
TOWOLDMON0001709



Experiment No. 1
8.6 Micrograms of Aroclor 1242/liter
Figure 4

GBRN002136

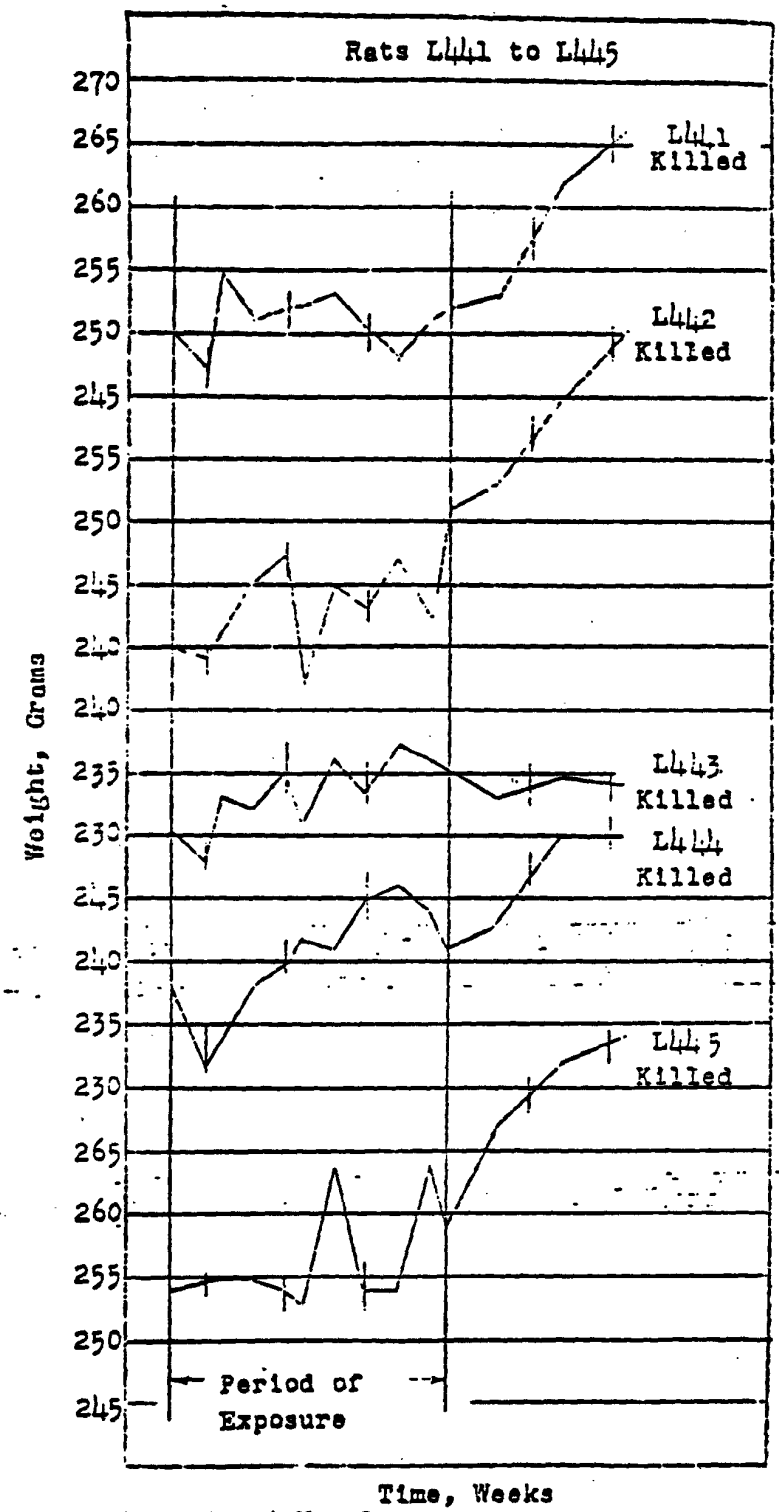
TOWOLDMON0001710



Experiment No. 1
8.6 Micrograms of Aroclor 1242/liter
Figure 5

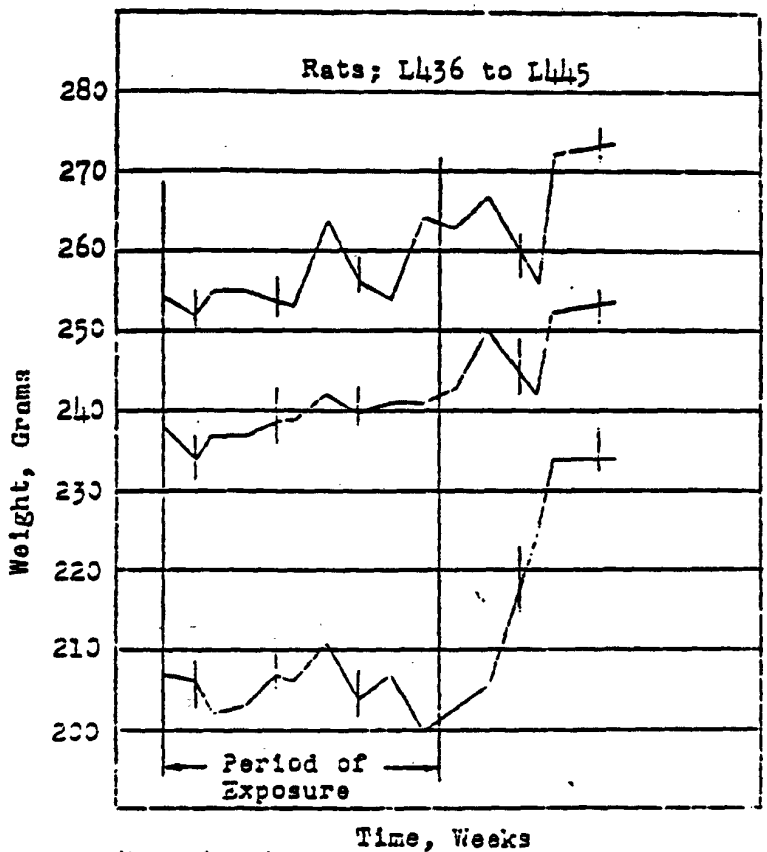
GBRN002137

TOWOLDMON0001711



Experiment No. 1
8.6 Micrograms of Aroclor 1242/liter
Figure 6

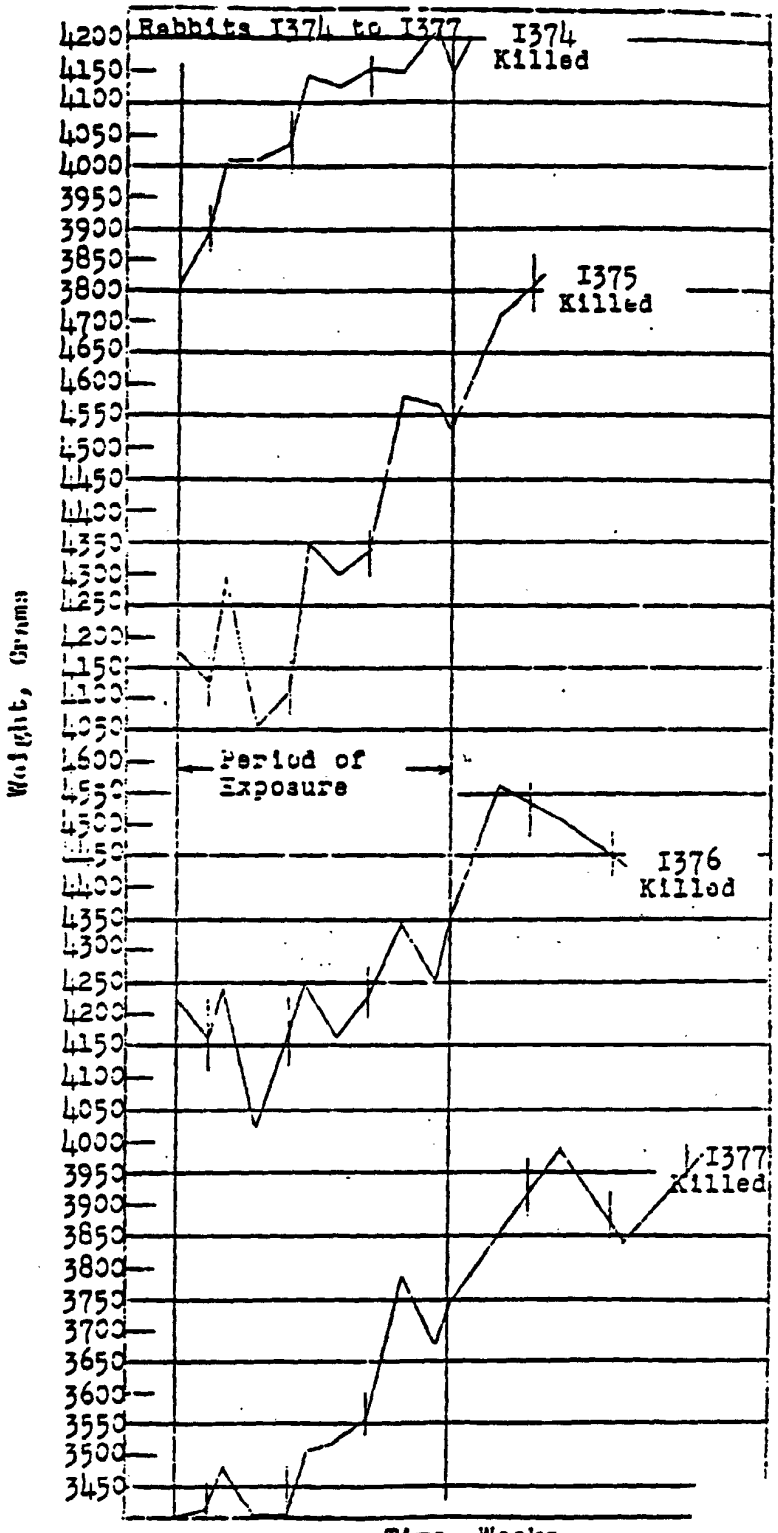
GBRN002138



Experiment No.1
8.6 Micrograms of Aroclor 1242/liter
Figure 7

GBRN002139

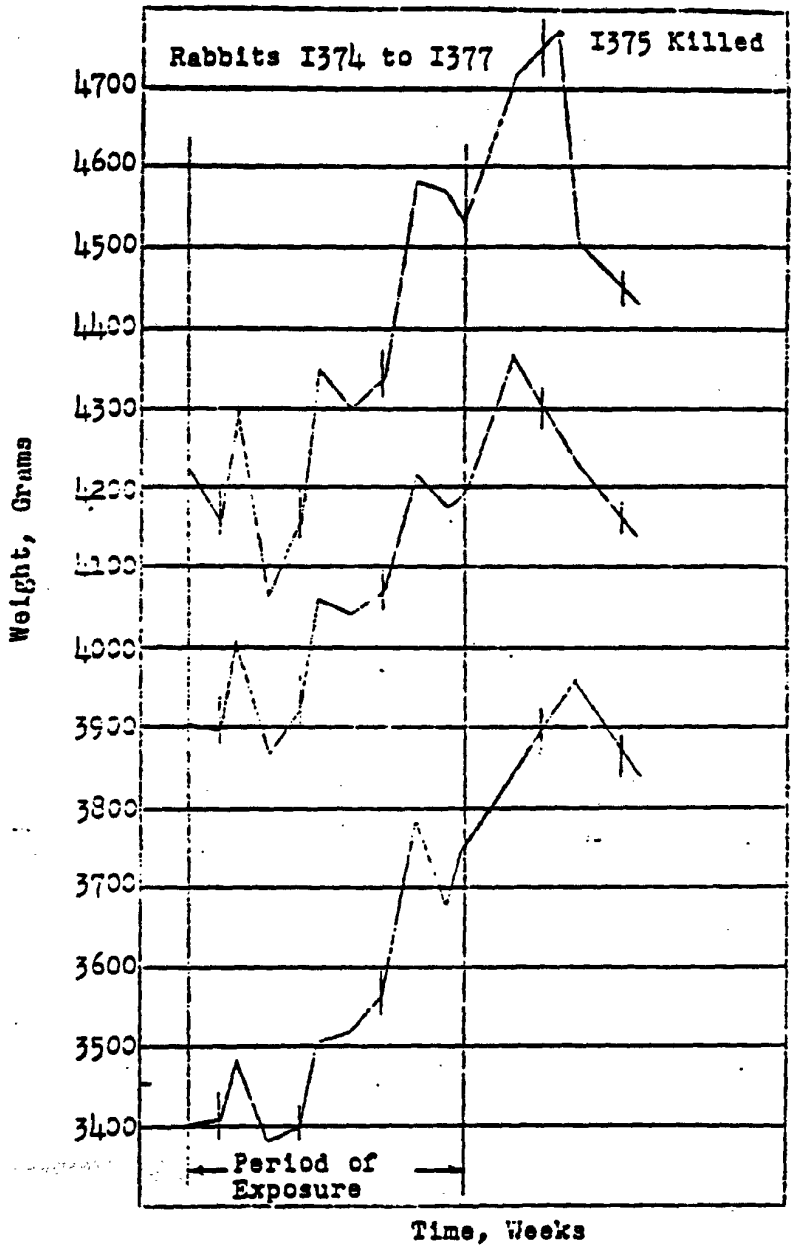
TOWOLDMON0001713



Experiment No. 1
8.6 Micrograms of Aroclor 1242/liter

Figure 2

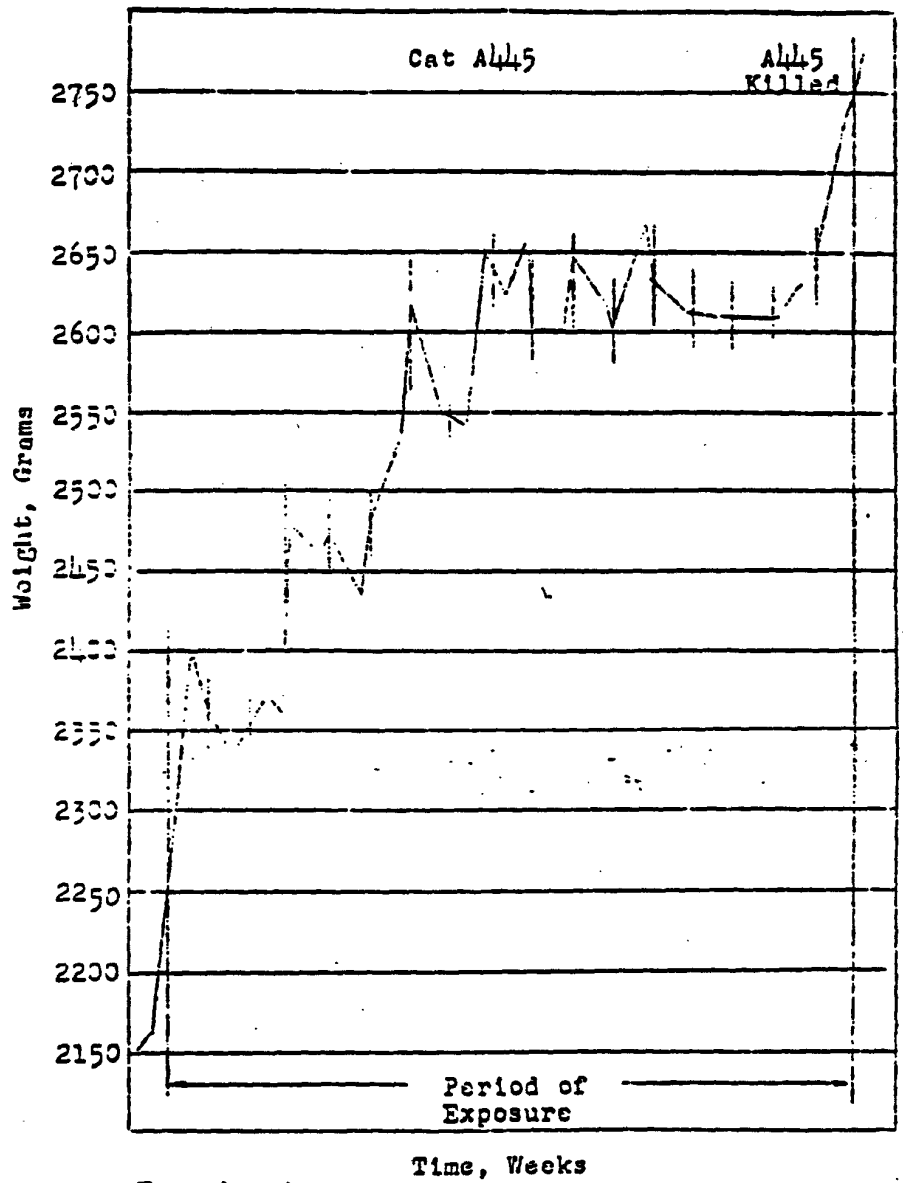
GBRN002140



Experiment No. 1
8.6 Micrograms of Aroclor 1242/liter
Figure 9

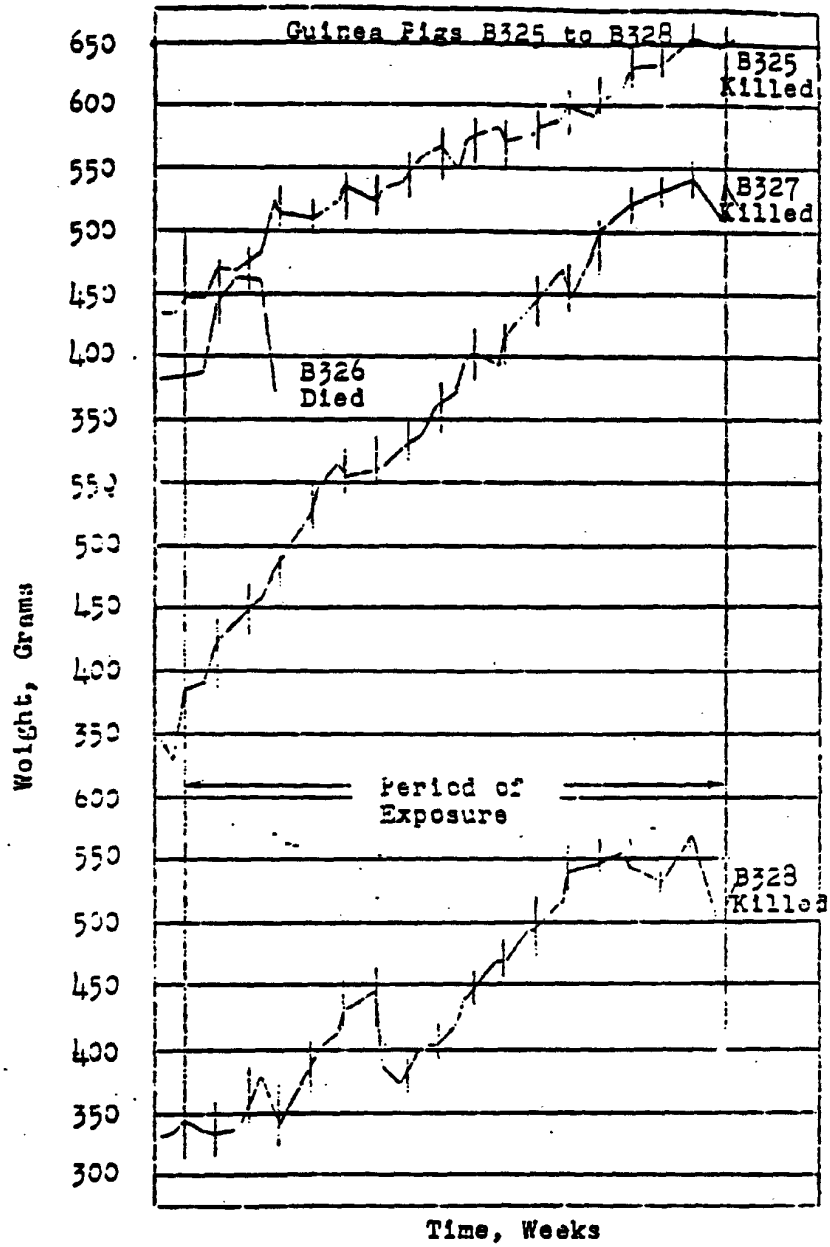
GBRN002141

TOWOLDMON0001715



Experiment No. 2
6.8 Micrograms of Aroclor 1242/liter
Figure 10

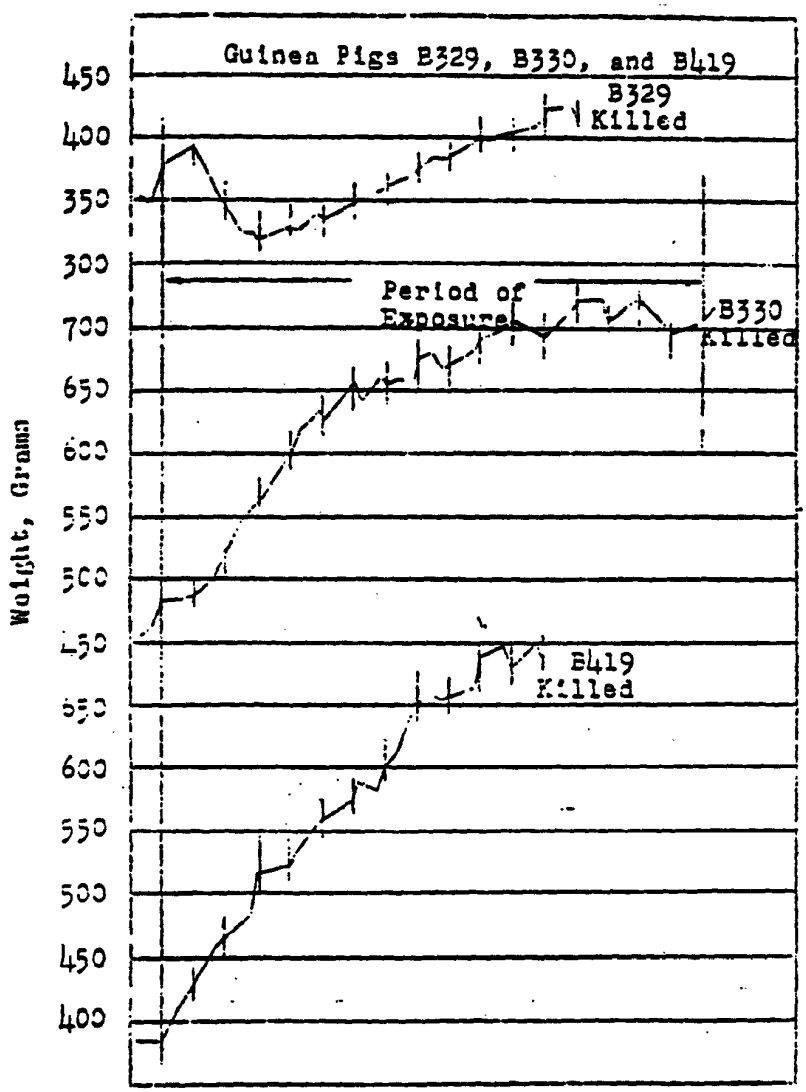
GBRN002142



Experiment No. 2
6.8 Micrograms of Aroclor 1242/liter
Figure 11

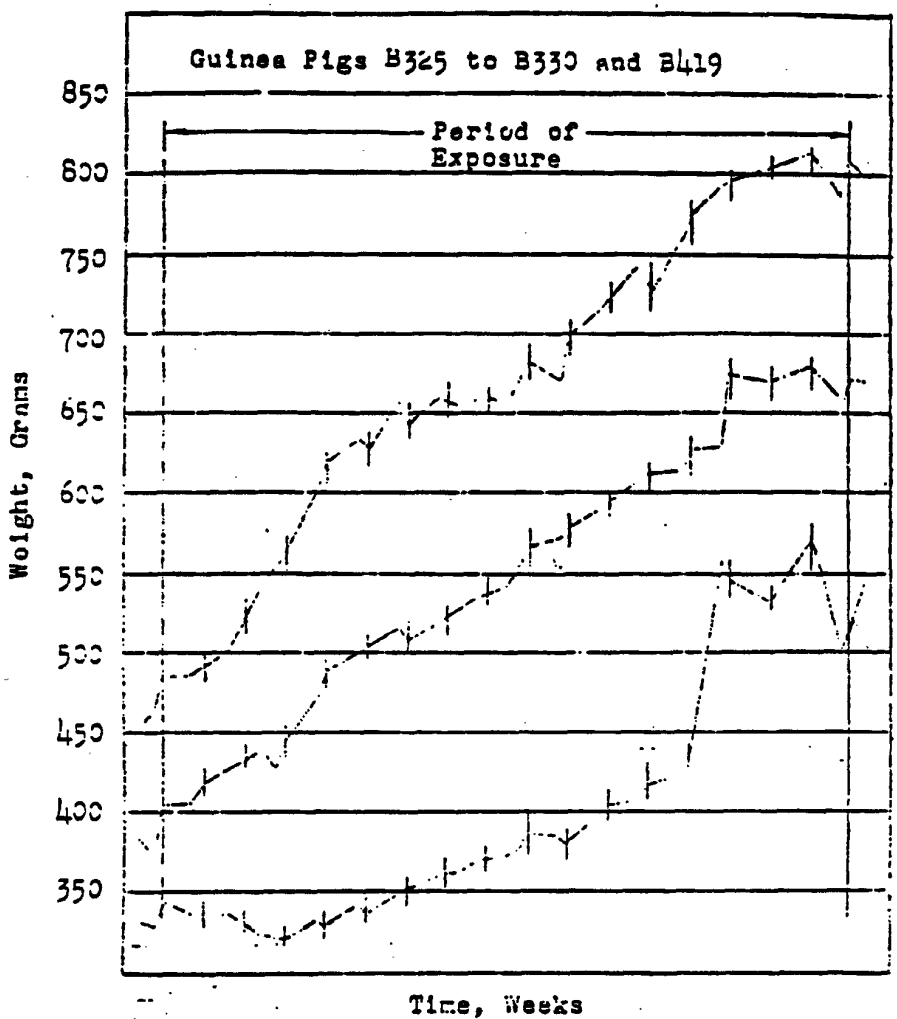
GBRN002143

TOWOLDMON0001717



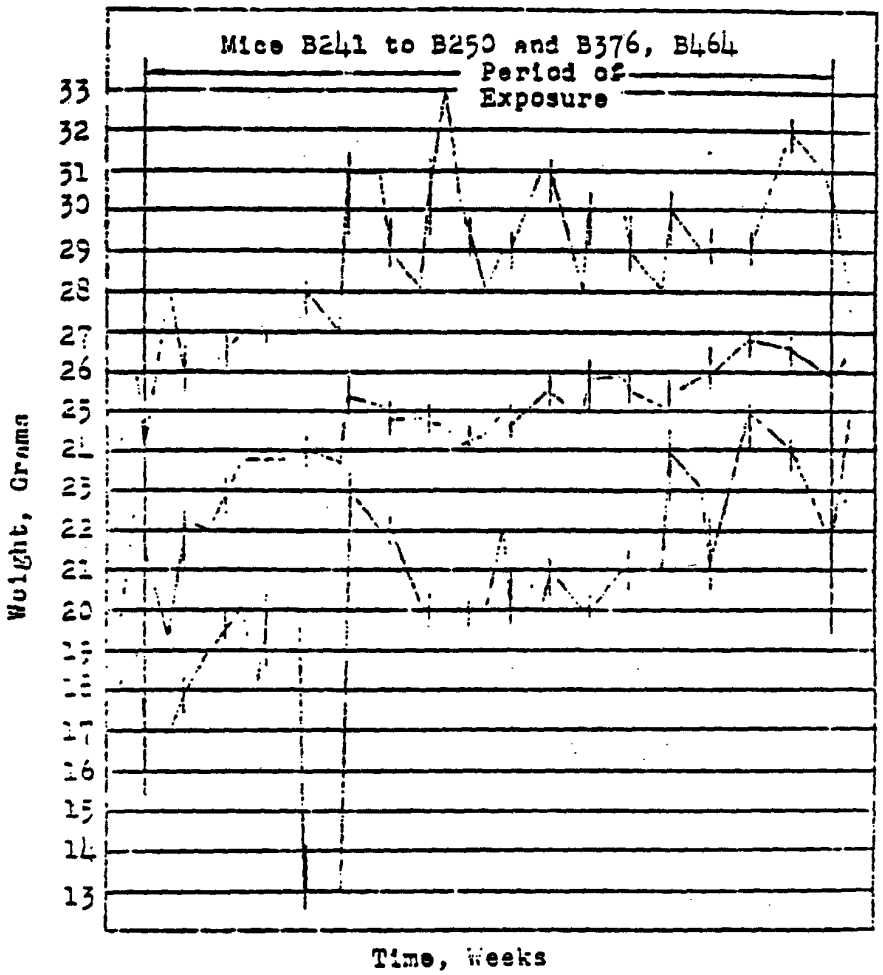
Experiment No. 2
6.8 Micrograms of Aroclor 1242/liter
Figure 12

GBRN002144



Experiment No. 2
6.8 Micrograms of Aroclor 1242/liter
Figure 13

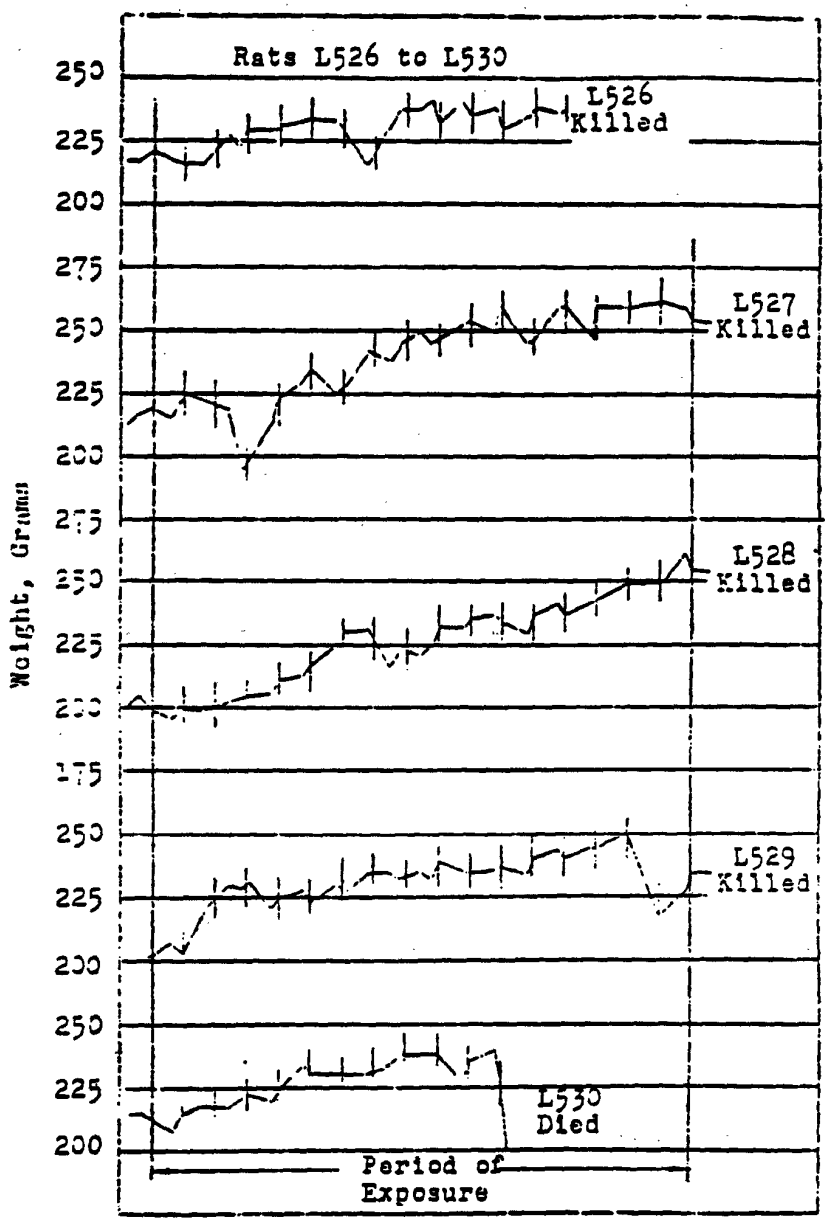
GBRN002145



Experiment No. 2
6.8 Micrograms of Aroclor 1242/liter
Figure 14

GBRN002146

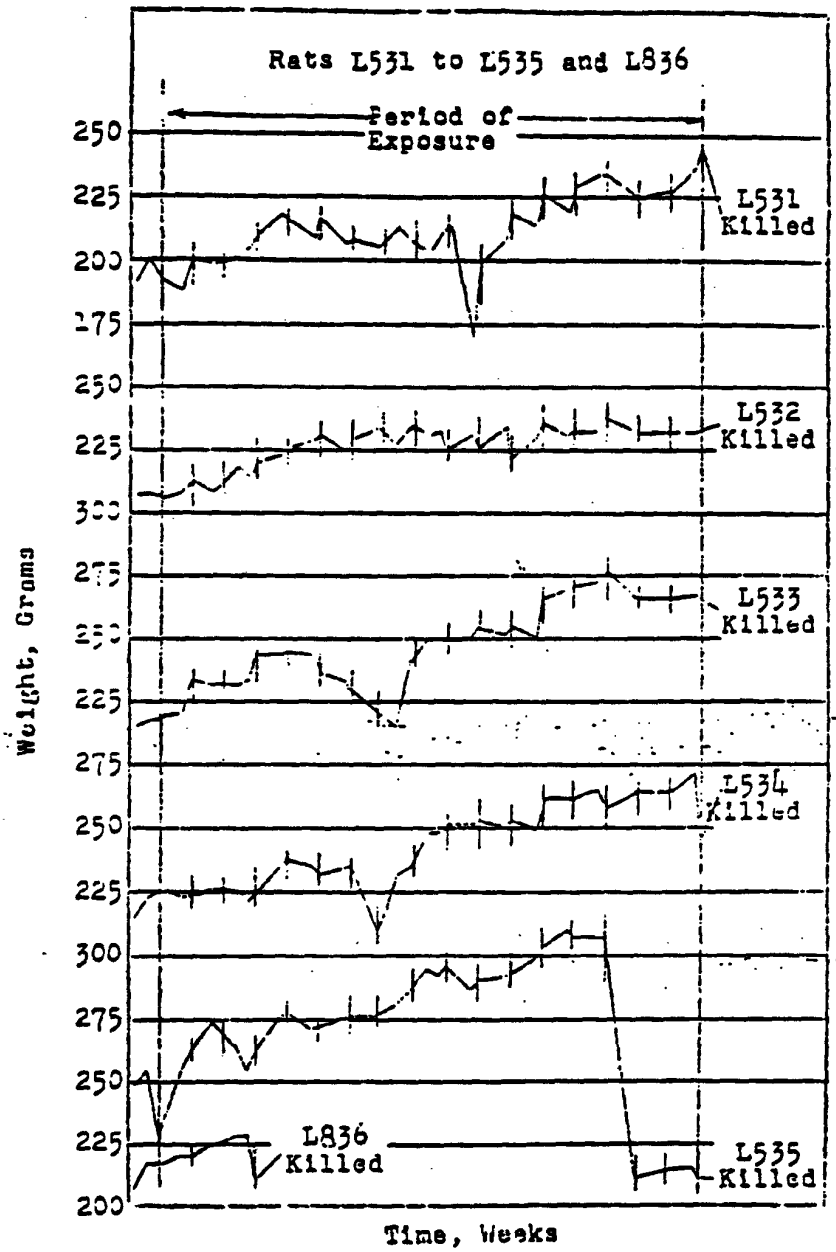
TOWOLDMON0001720



Experiment No. 2
6.8 Micrograms of Aroclor 1242/liter
Figure 15

GBRN002147

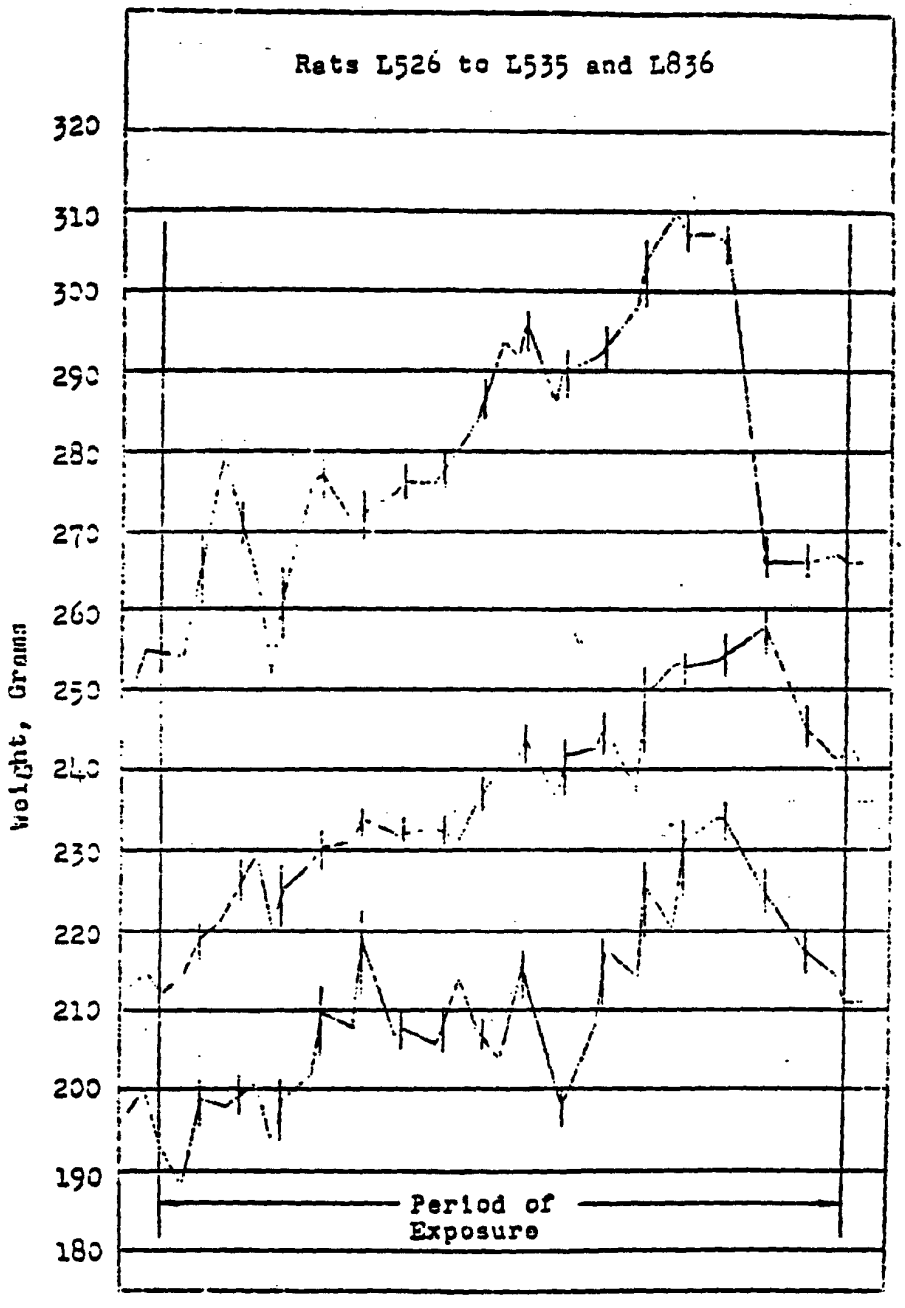
TOWOLDMON0001721



Experiment No. 2
6.8 Micrograms of Aroclor 1242/liter
Figure 16

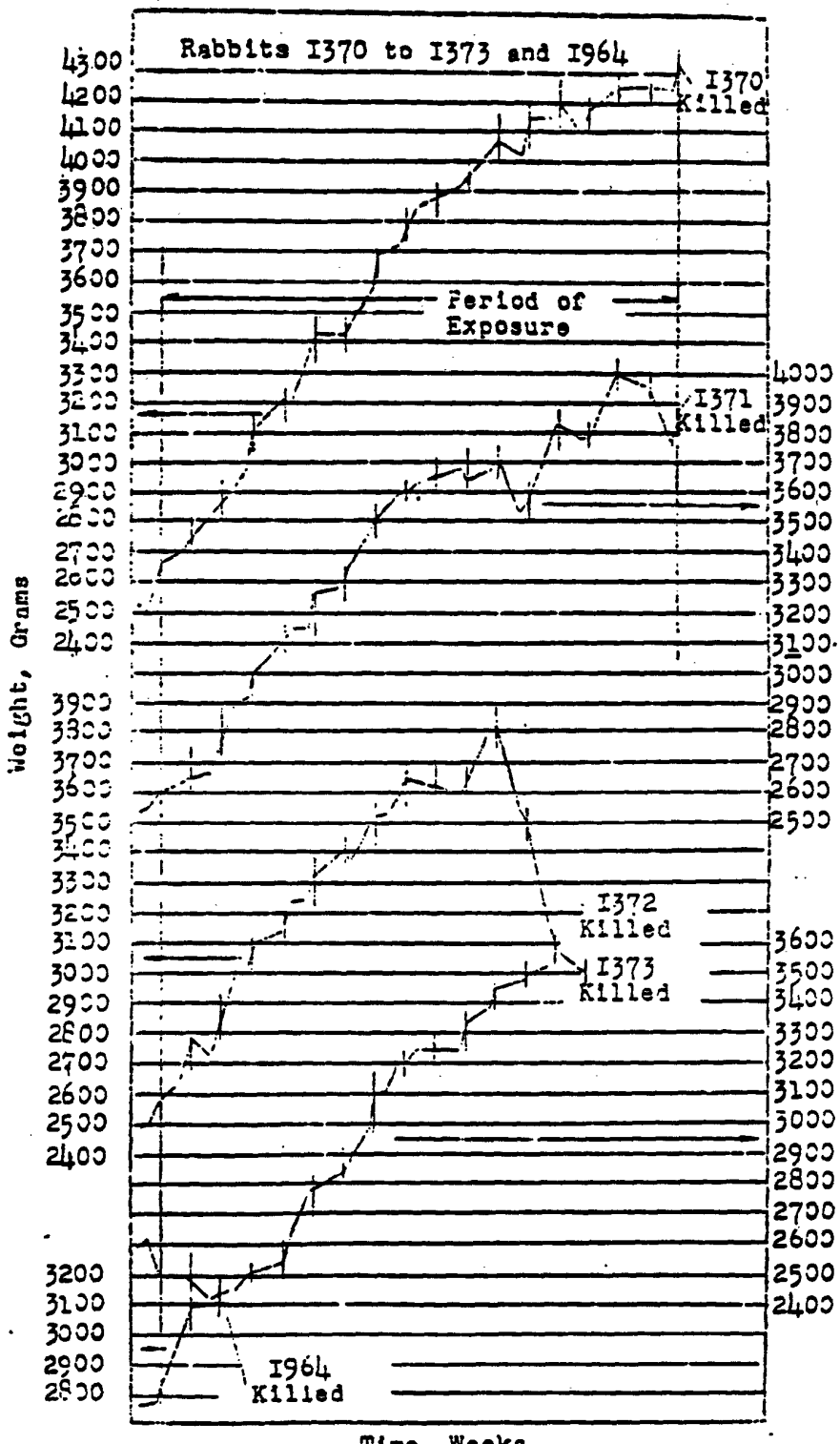
GBRN002148

TOWOLDMON0001722



Experiment No. 2
6.8 Micrograms of Aroclor 1242/liter
Figure 17

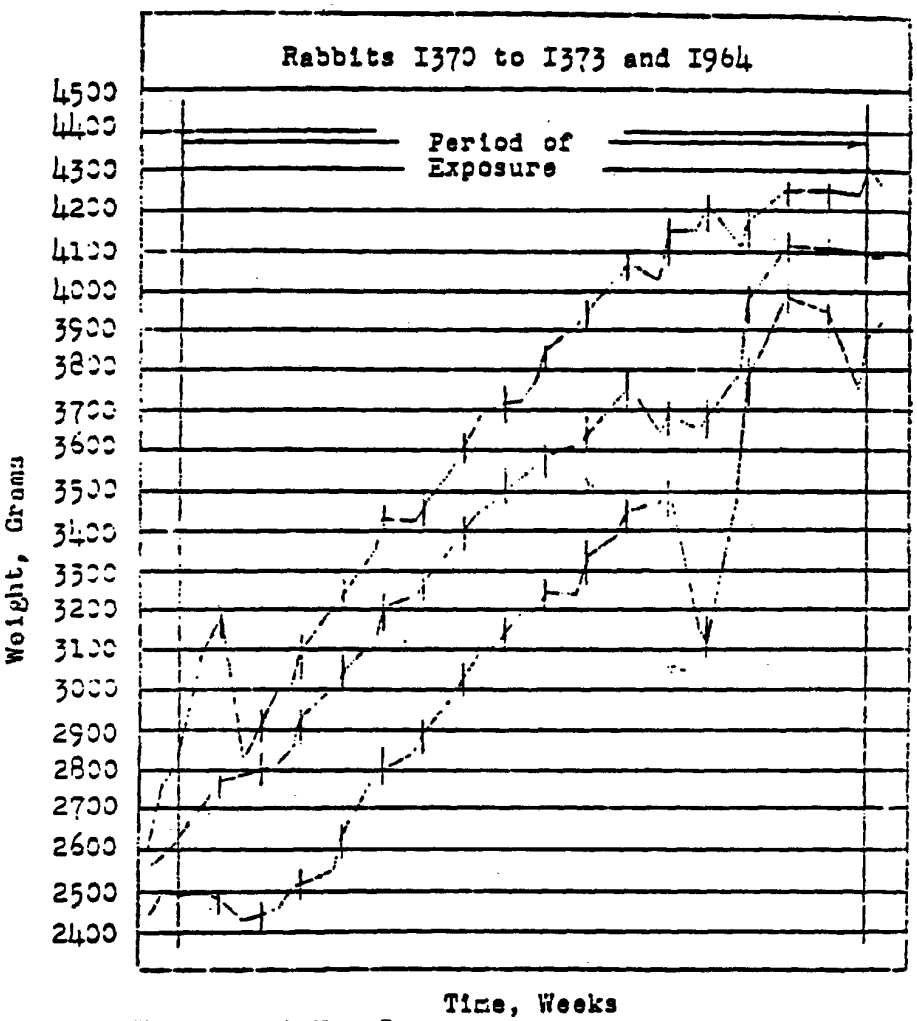
GBRN002149



Experiment No. 2
6.8 Micrograms of Aroclor 1242/liter
Figure 18

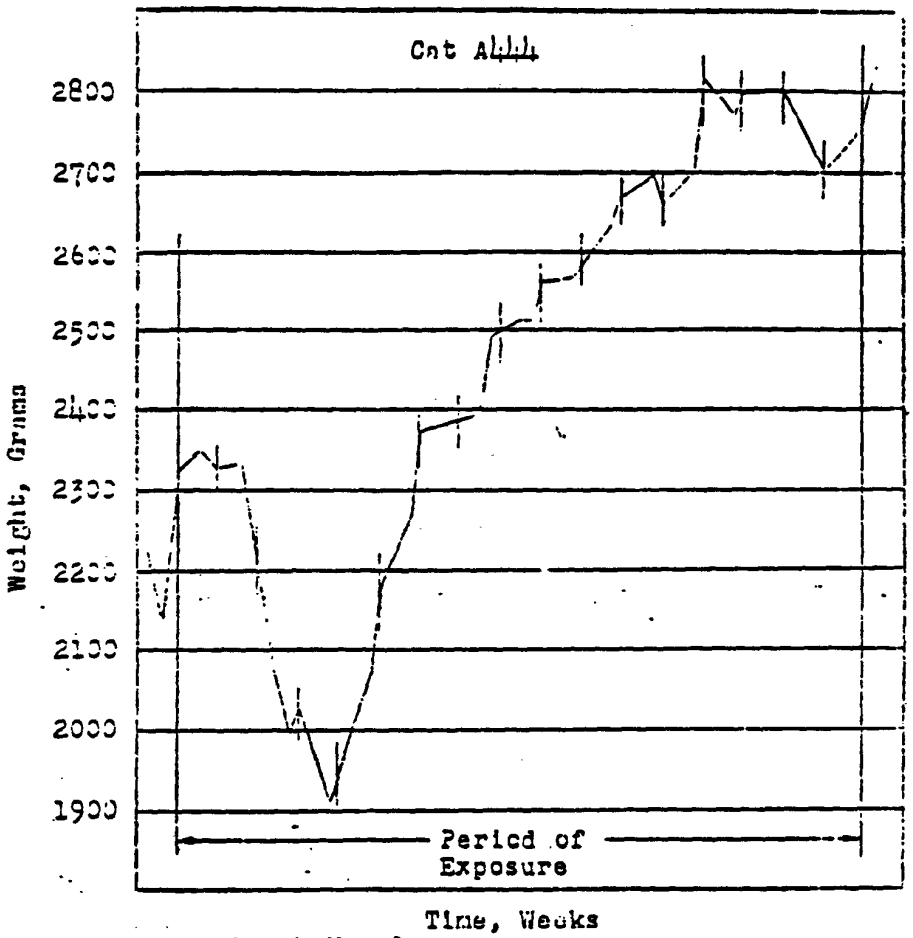
GBRN002150

TOWOLDMON0001724



Experiment No. 2
6.8 Micrograms of Aroclor 1242/liter
Figure 19

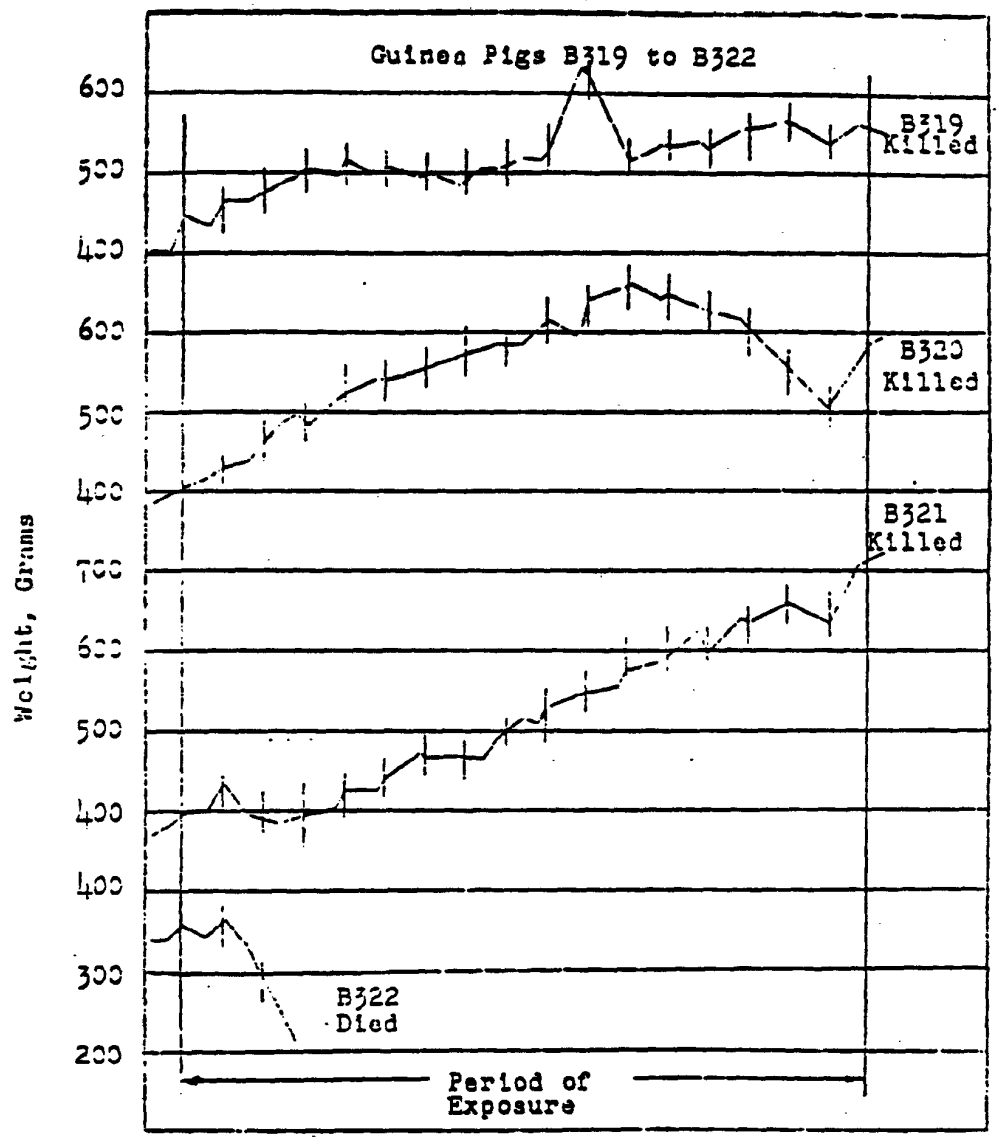
GBRN002151



Experiment No. 1
5.4 Micrograms of Aroclor 1254/liter
Figure 20

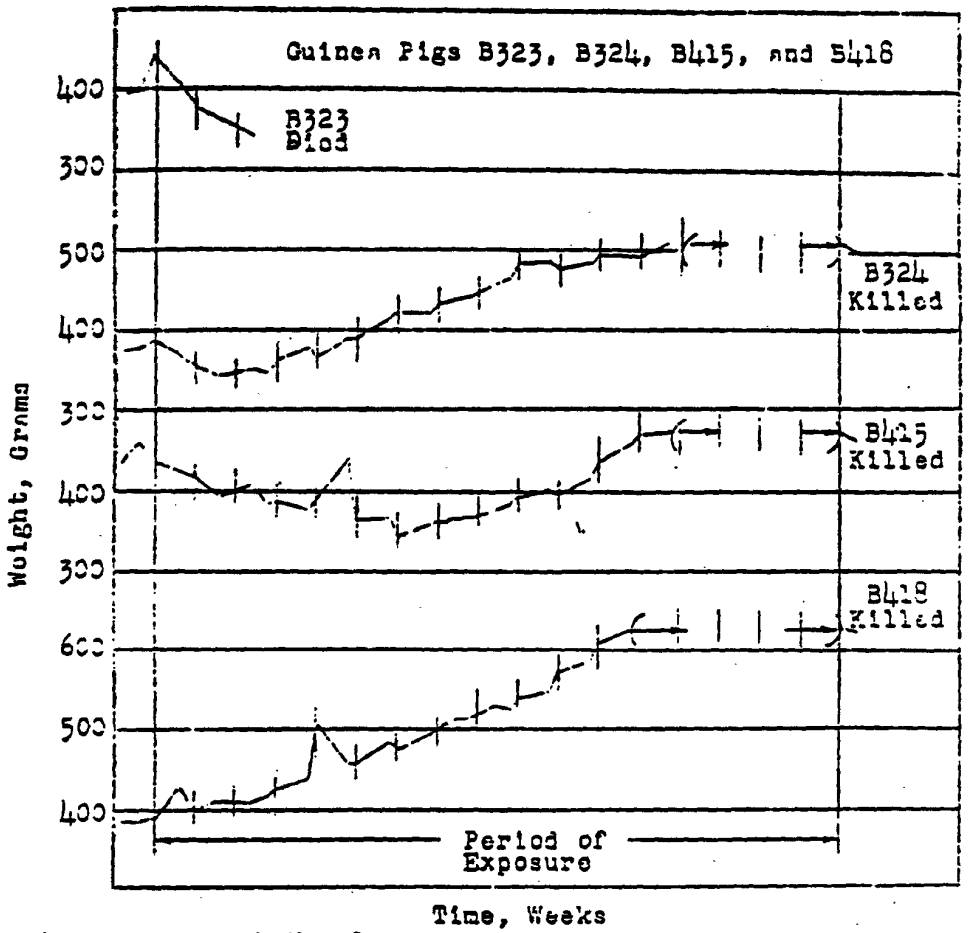
GBRN002152

TOWOLDMON0001726



Experiment No. 1
5.4 Micrograms of Aroclor 1254/liter
Figure 21

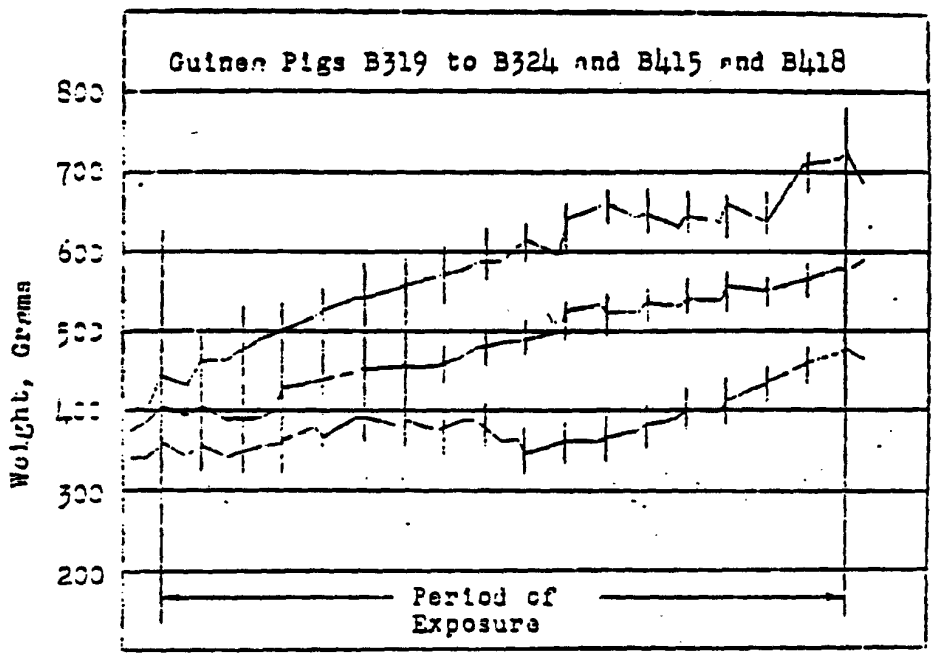
GBRN002153



Experiment No. 1
5.4 Micrograms of Aroclor 1254/liter
Figure 22

GBRN002154

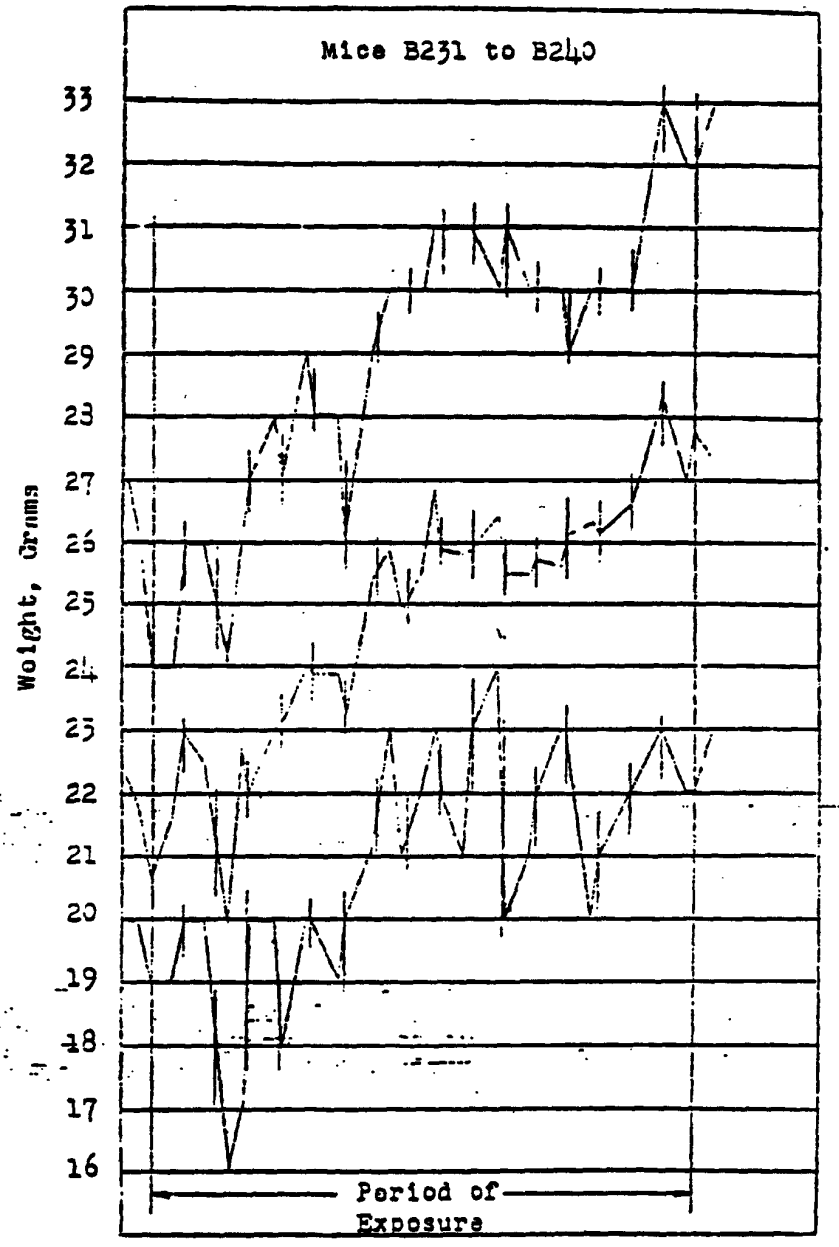
TOWOLDMON0001728



xperiment No. 1
5.4 Micrograms of Aroclor 1254/liter
Figure 23

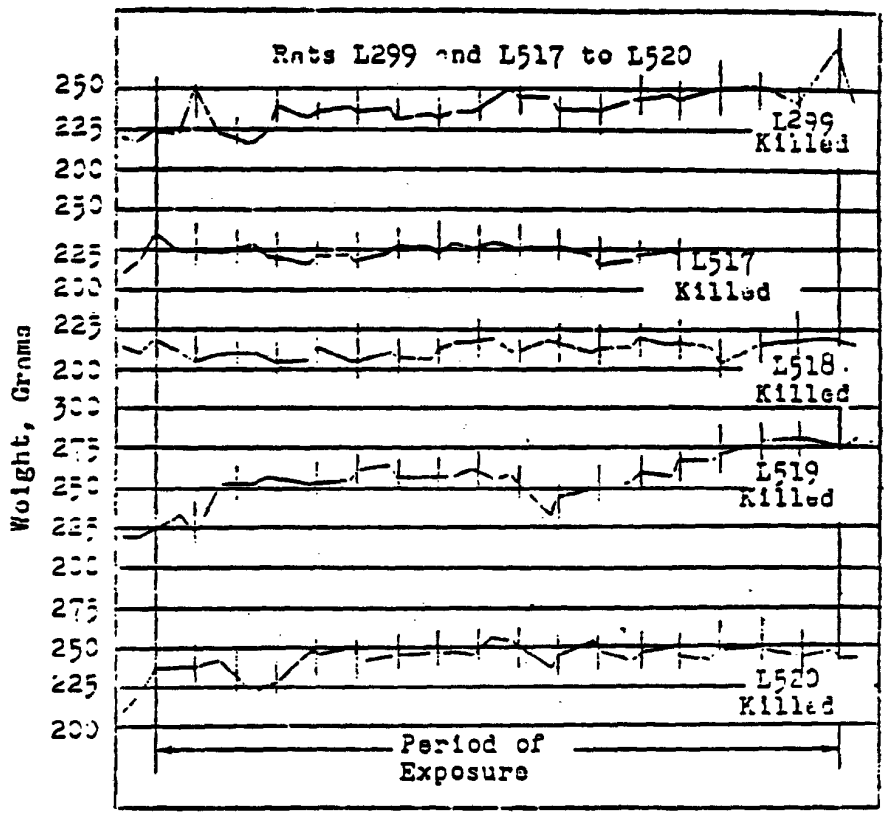
GBRN002155

TOWOLDMON0001729



Experiment No. 1
5.4 Micrograms of Aroclor 1254/liter
Figure 24

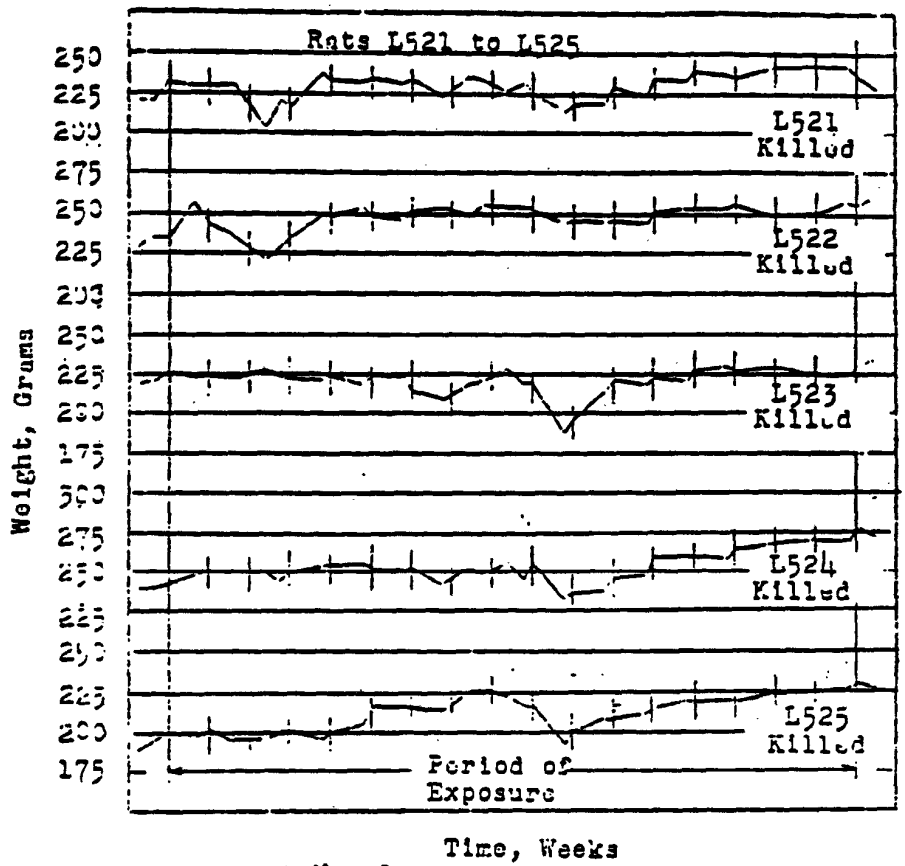
GBRN002156



Experiment No. 1
5.4 Micrograms of Aroclor 1254/liter
Figure 25

GBRN002157

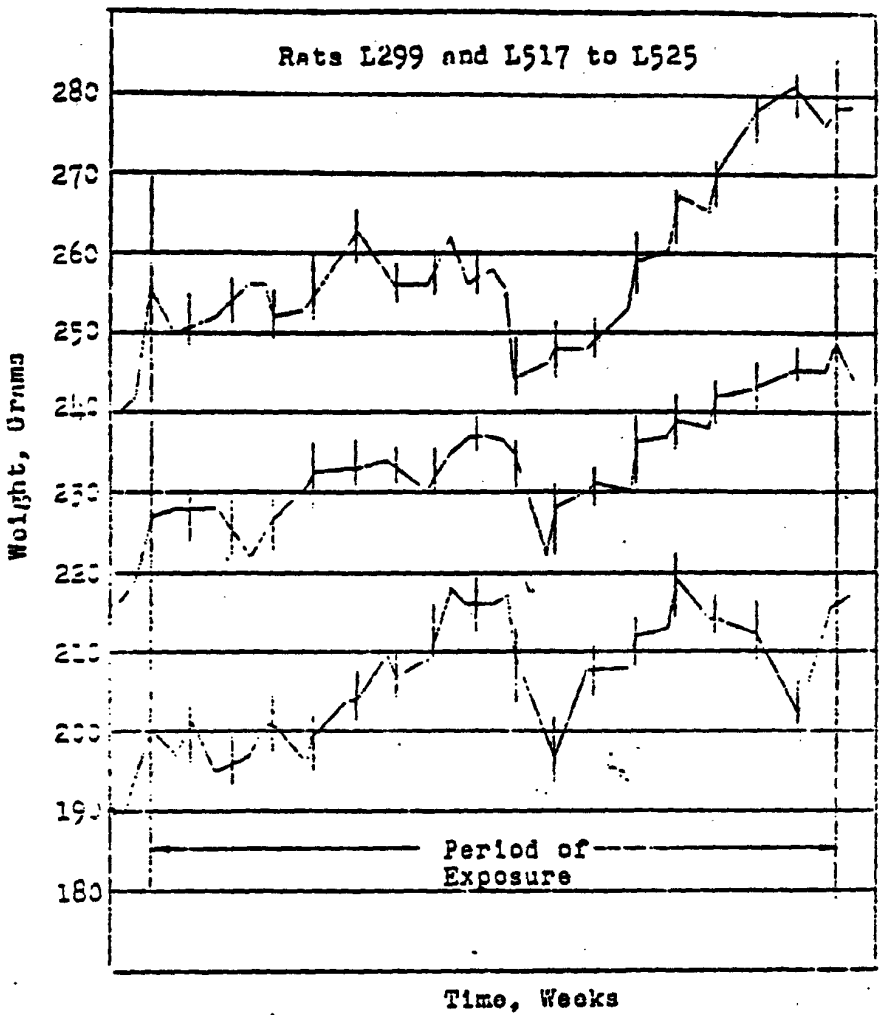
TOWOLDMON0001731



Experiment No. 1
5.4 Micrograms of Aroclor 1254/liter
Figure 26

GBRN002158

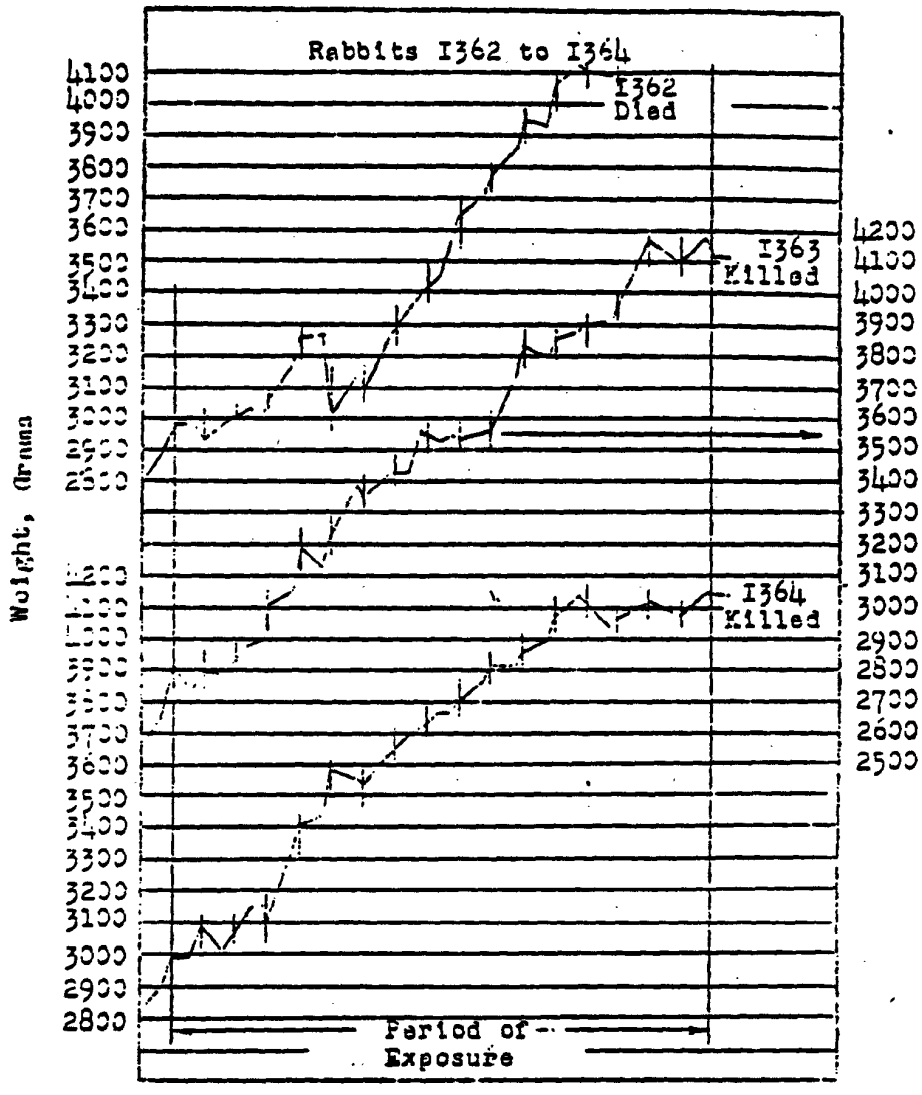
TOWOLDMON0001732



xperiment No. 1
5.4 Micrograms of Aroclor 1254/liter
Figure 27

GBRN002159

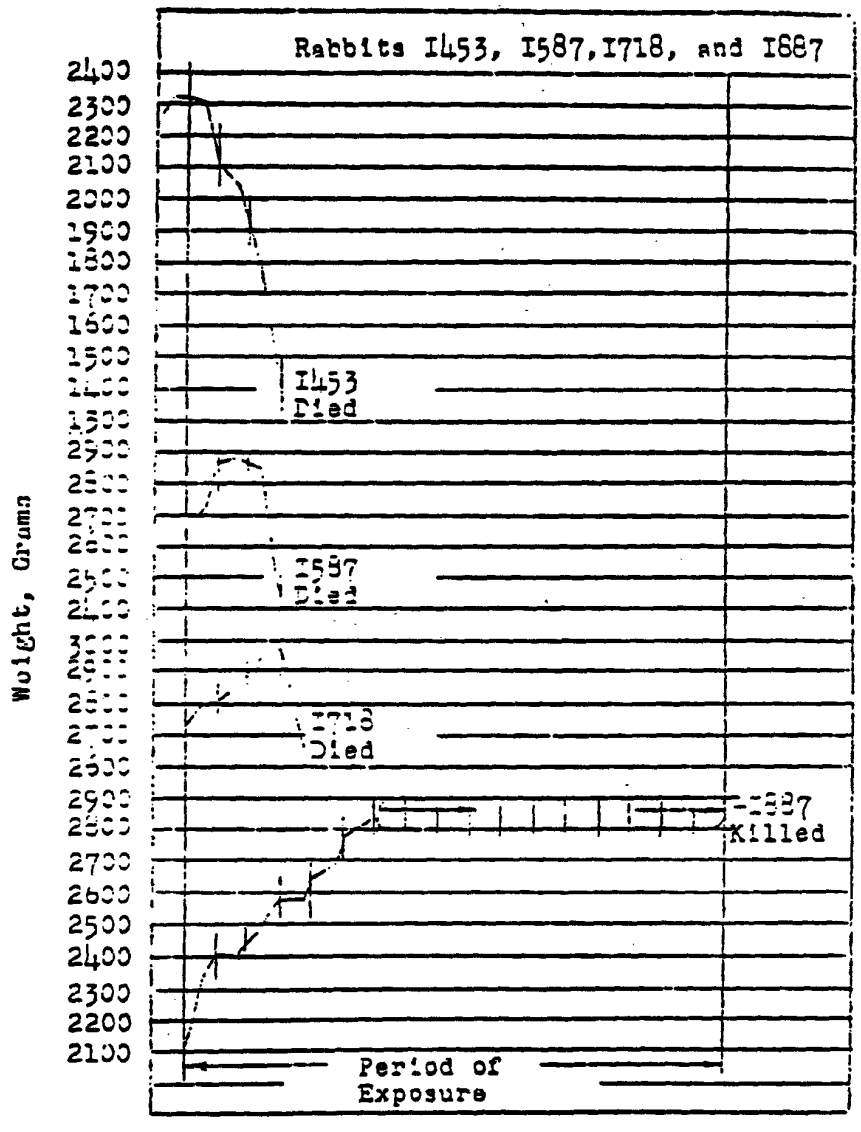
TOWOLDMON0001733



Experiment No. 1
5.4 Micrograms of Aroclor 1254/liter
Figure 28

GBRN002160

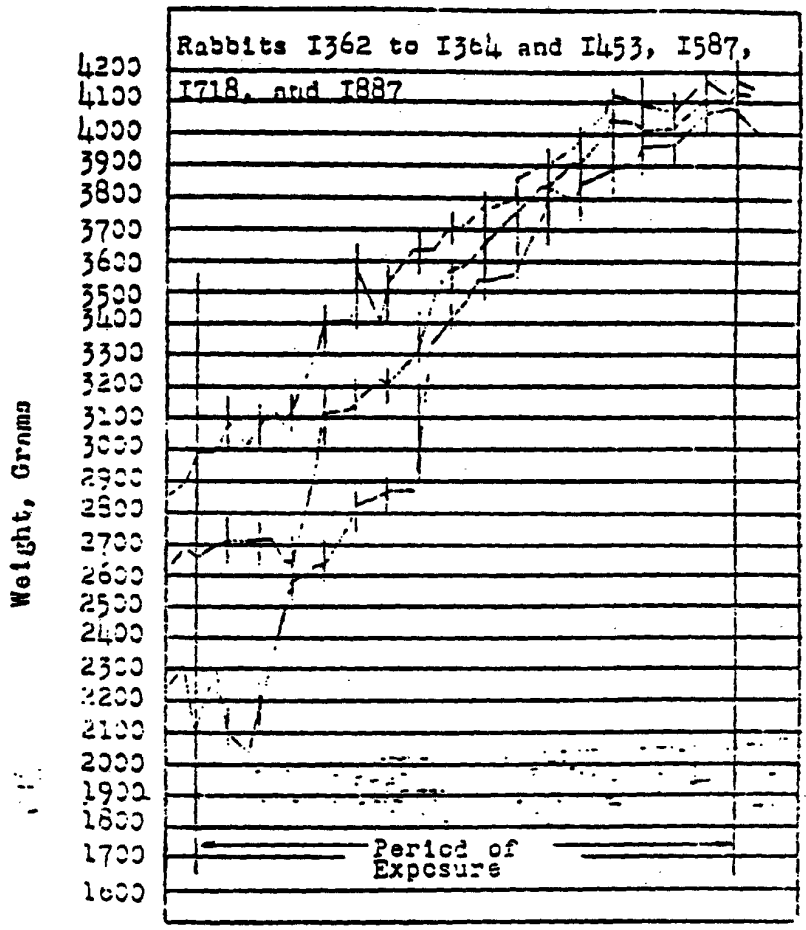
TOWOLDMON0001734



Experiment No. 1
5.4 Micrograms of Aroclor 1254/liter
Figure 29

GBRN002161

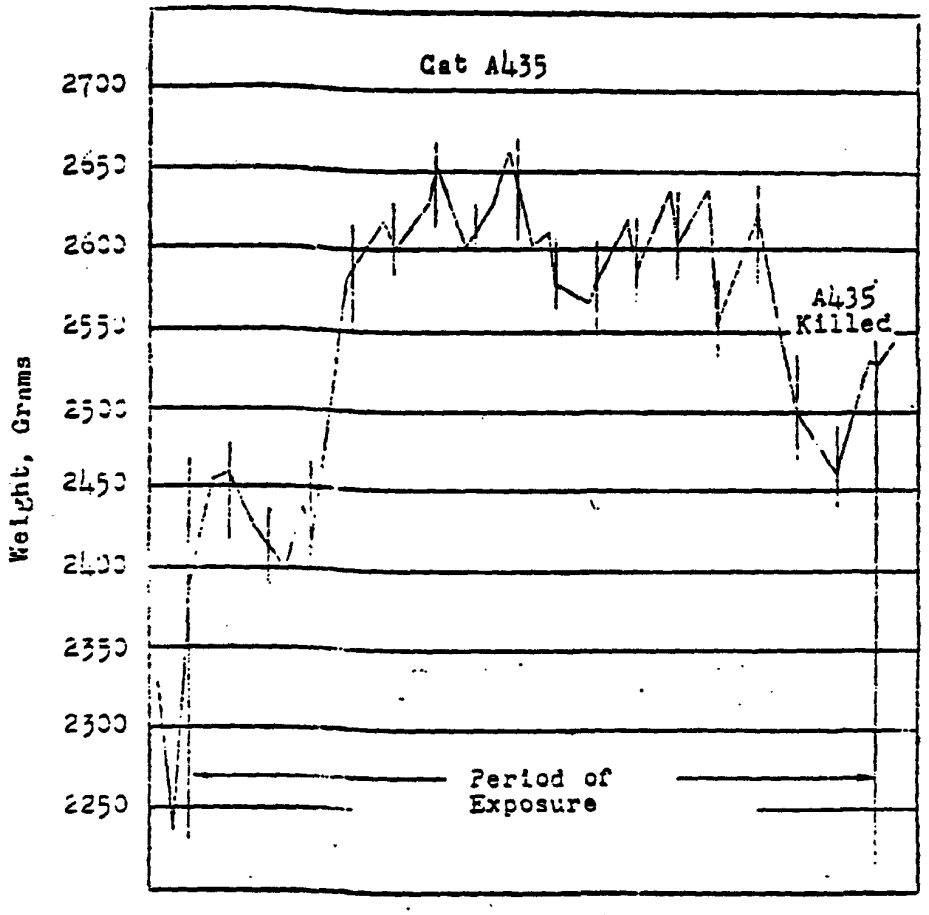
TOWOLDMON0001735



Experiment No. 1
5.4 Micrograms of Aroclor 1254/liter
Figure 30

GBRN002162

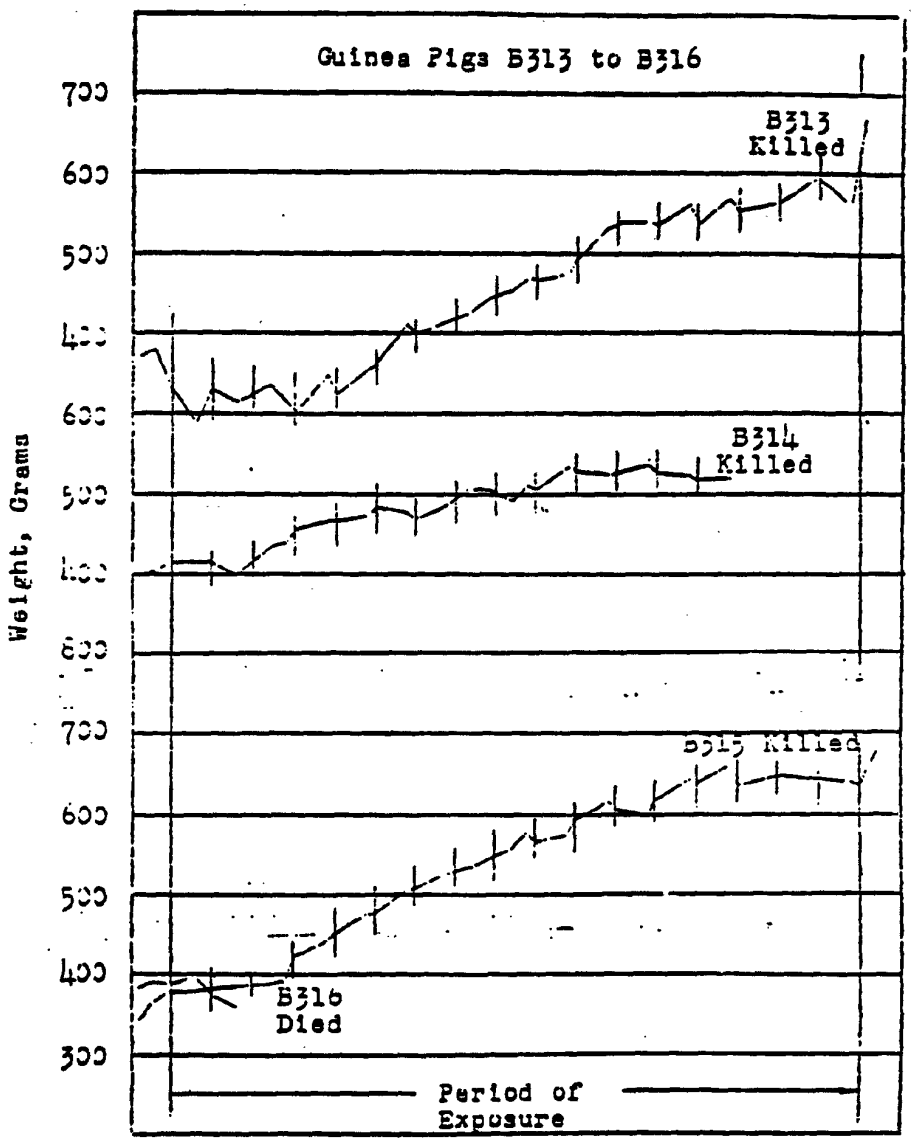
TOWOLDMON0001736



Control Subjected to Conditioned Air; for
Experiment No. 2 Aroclor 1242 and
Experiment No. 1 Aroclor 1254
Figure 31

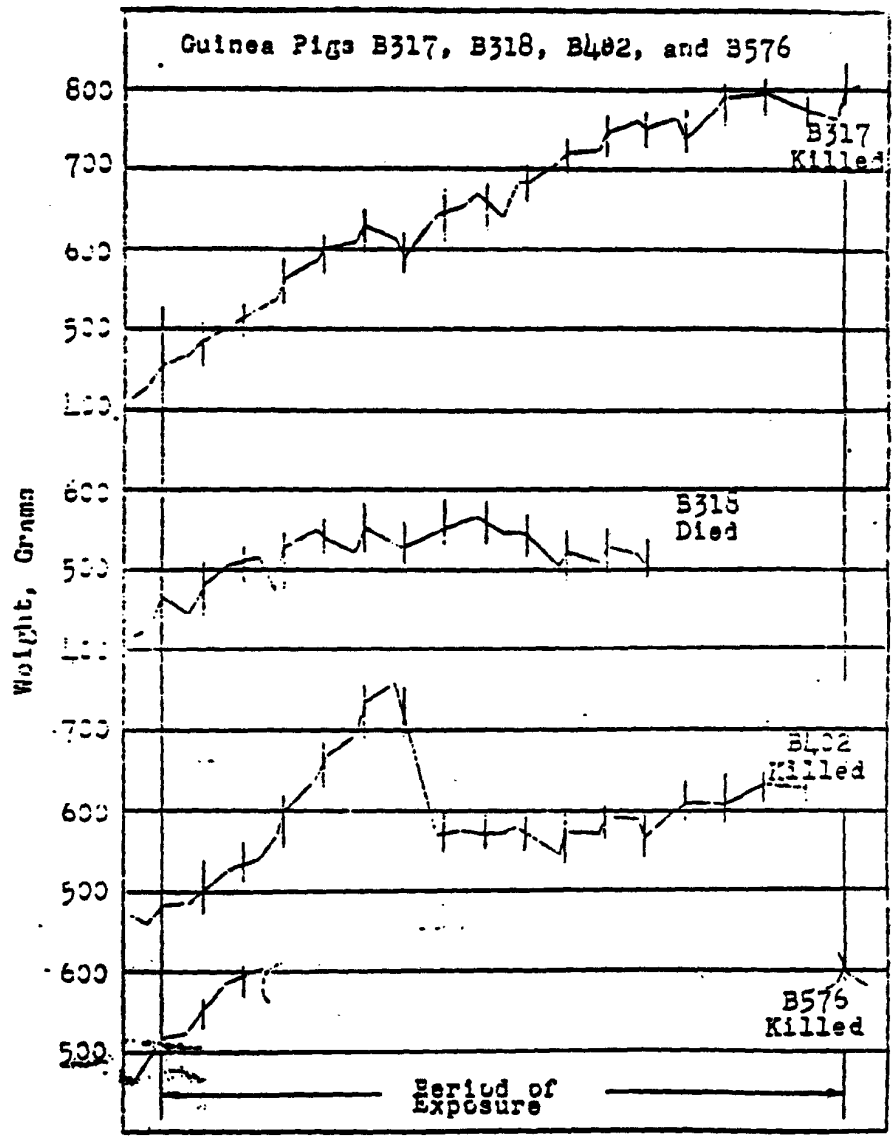
GBRN002163

TOWOLDMON0001737



Controls Subjected to Conditioned Air; for
Experiment No. 2 Aroclor 1242 and
Experiment No. 1 Aroclor 1254
Figure 32

GBRN002164

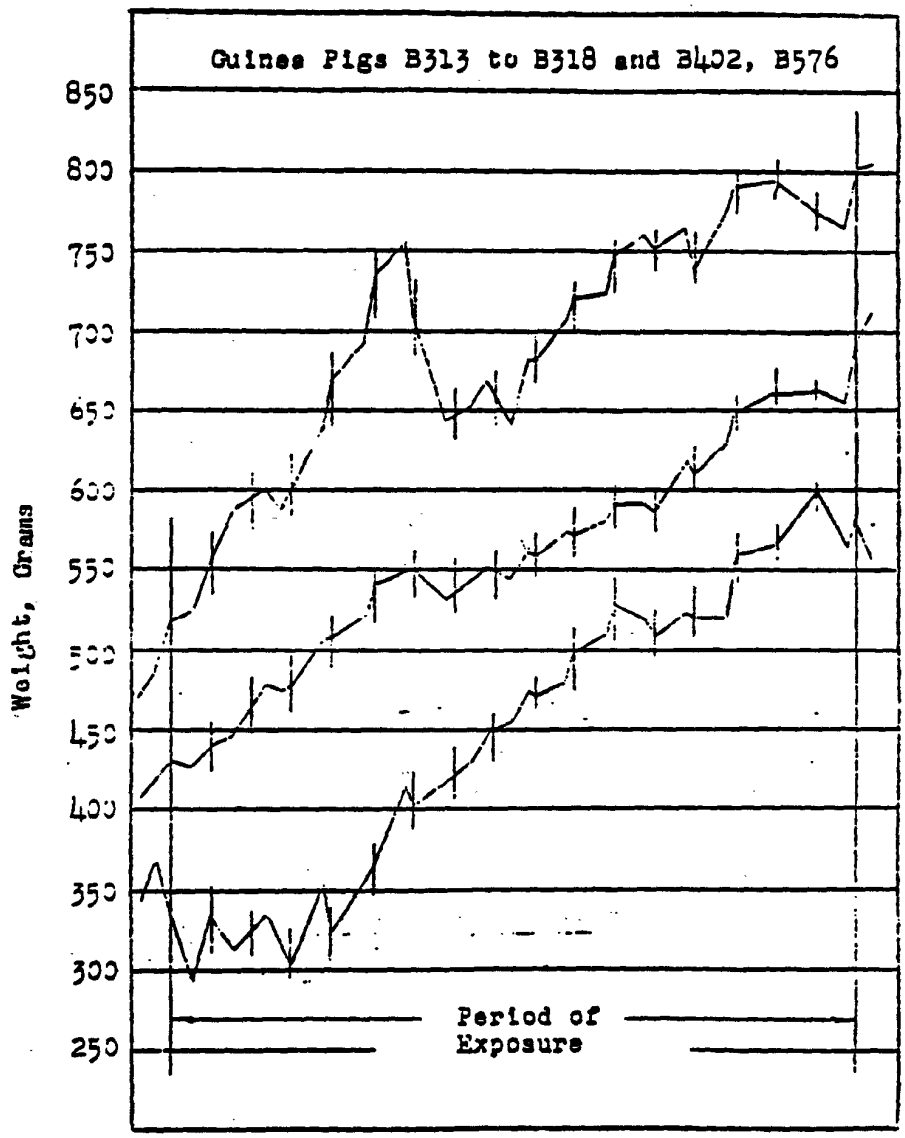


Time, Weeks

Controls Subjected to Conditioned Air; for
Experiment No. 2 Aroclor 1242 and
Experiment No. 1 Aroclor 1254
Figure 33

GBRND02165

TOWOLDMON0001739

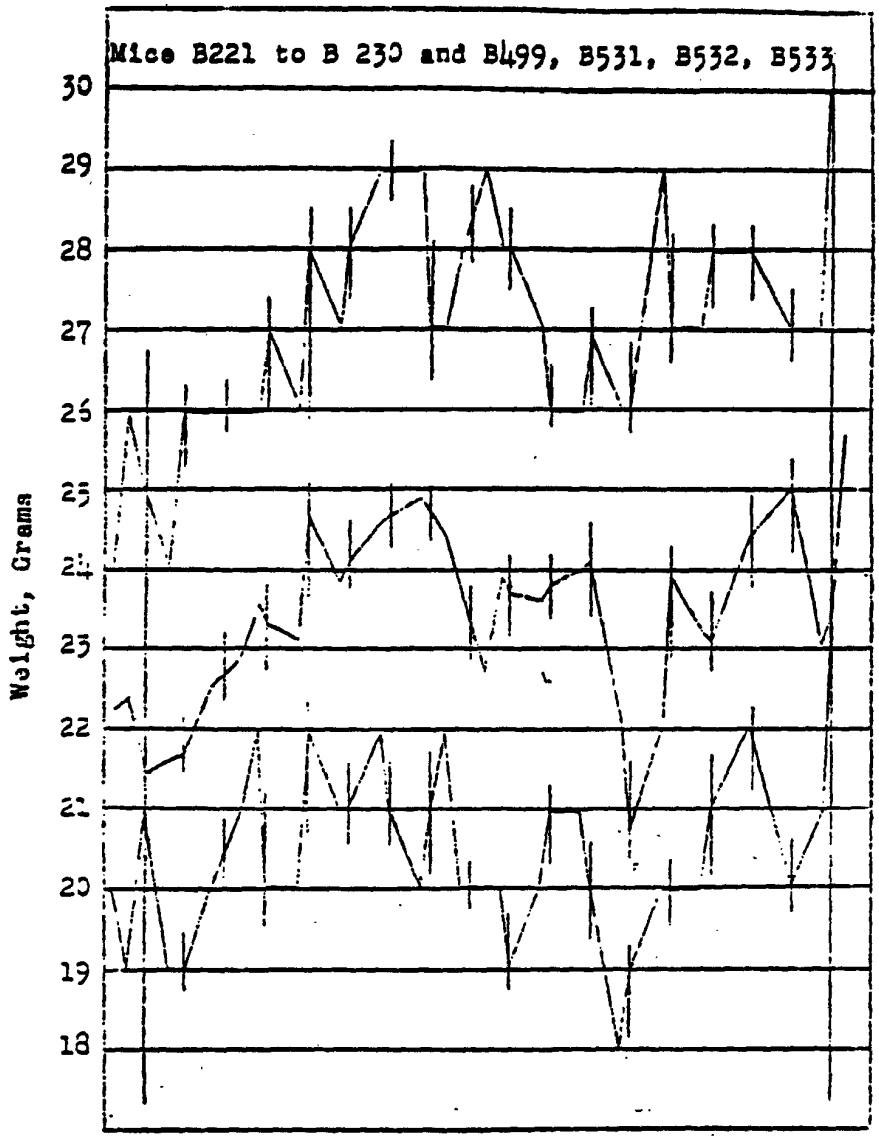


Controls Subjected to Conditioned Air; for Experiment No. 2 Aroclor 1242 and Experiment No. 1 Aroclor 1254

Figure 34

GBRN002166

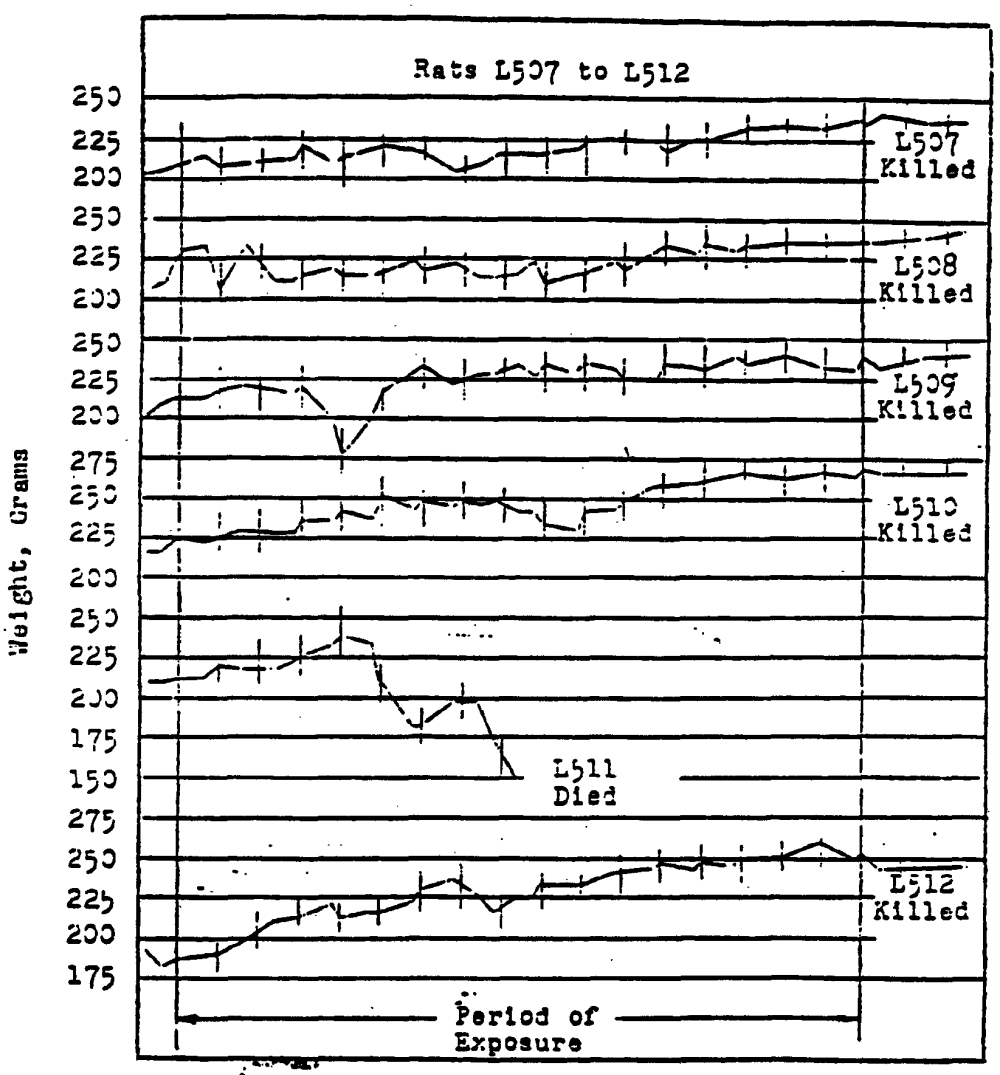
TOWOLDMON0001740



Time, Weeks
Controls Subjected to Conditioned Air;for
Experiment No. 2 Aroclor 1242 and
Experiment No. 1 Aroclor 1254
Figure 35

GBRN002167

TOWOLDMON0001741

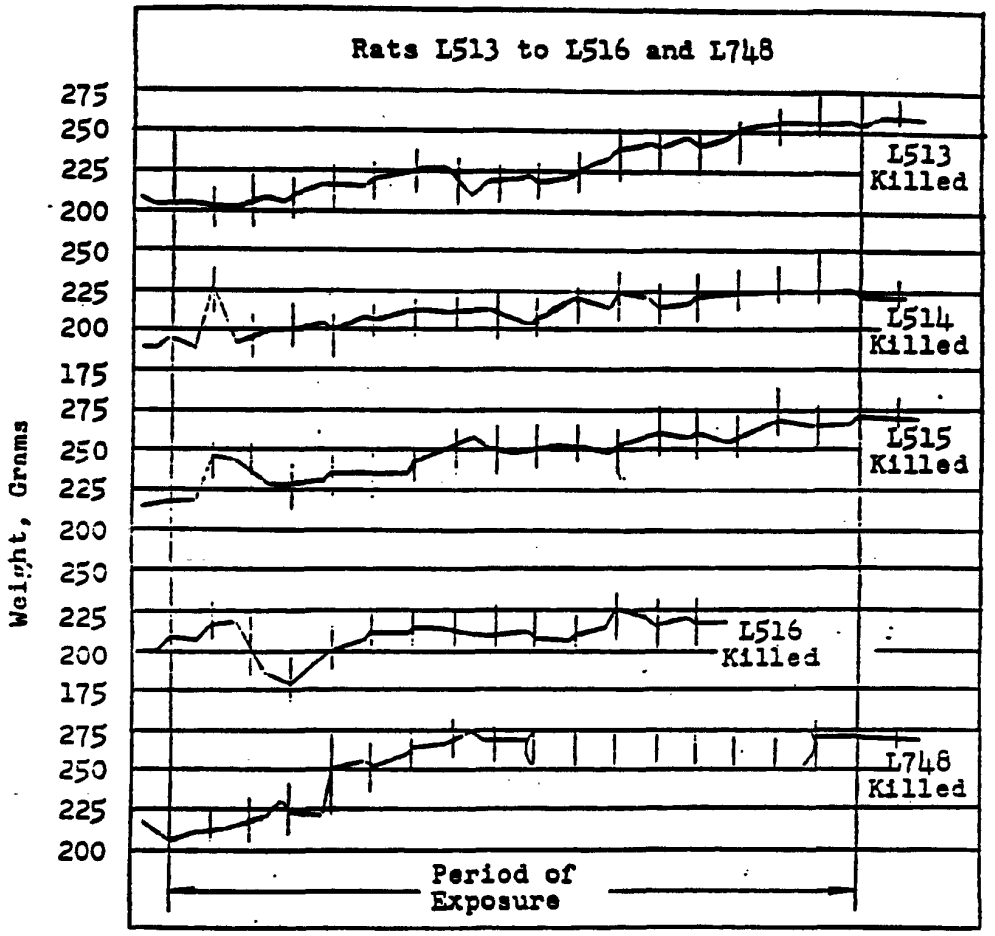


Controls Subjected to Conditioned Air; for
Experiment No. 2 Aroclor 1242 and
Experiment No. 1 Aroclor 1254

Figure 36

GBRN002168

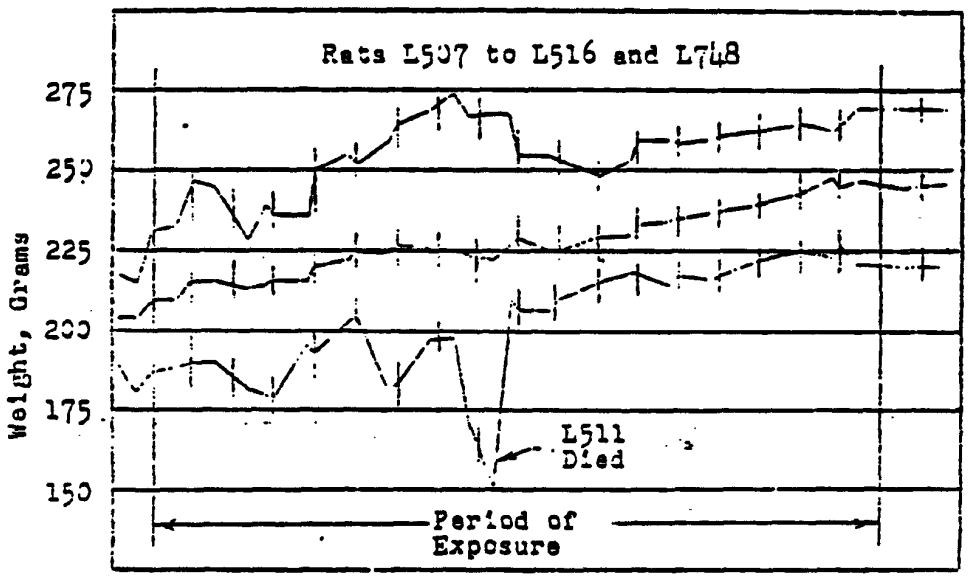
TOWOLDMON0001742



Controls Subjected to Conditioned Air; for
Experiment No. 2 Aroclor 1242 and
Experiment No. 1 Aroclor 1254
Figure 37

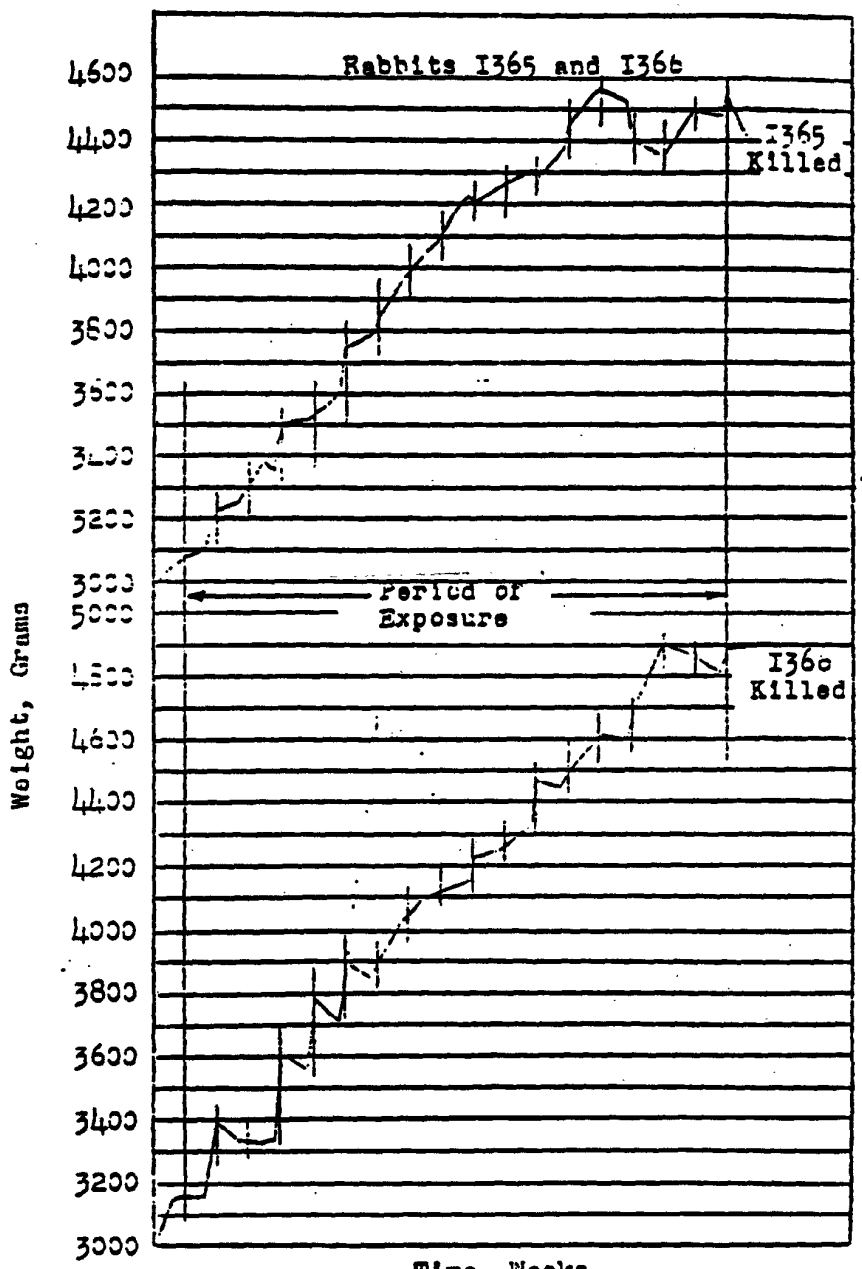
GBRN002169

TOWOLDMON0001743



Controls Subjected to Conditioned Air; for
xperiment No. 2 Aroclor 1242 and
xperiment No. 1 Aroclor 1254
Figure 38

GBRN002170

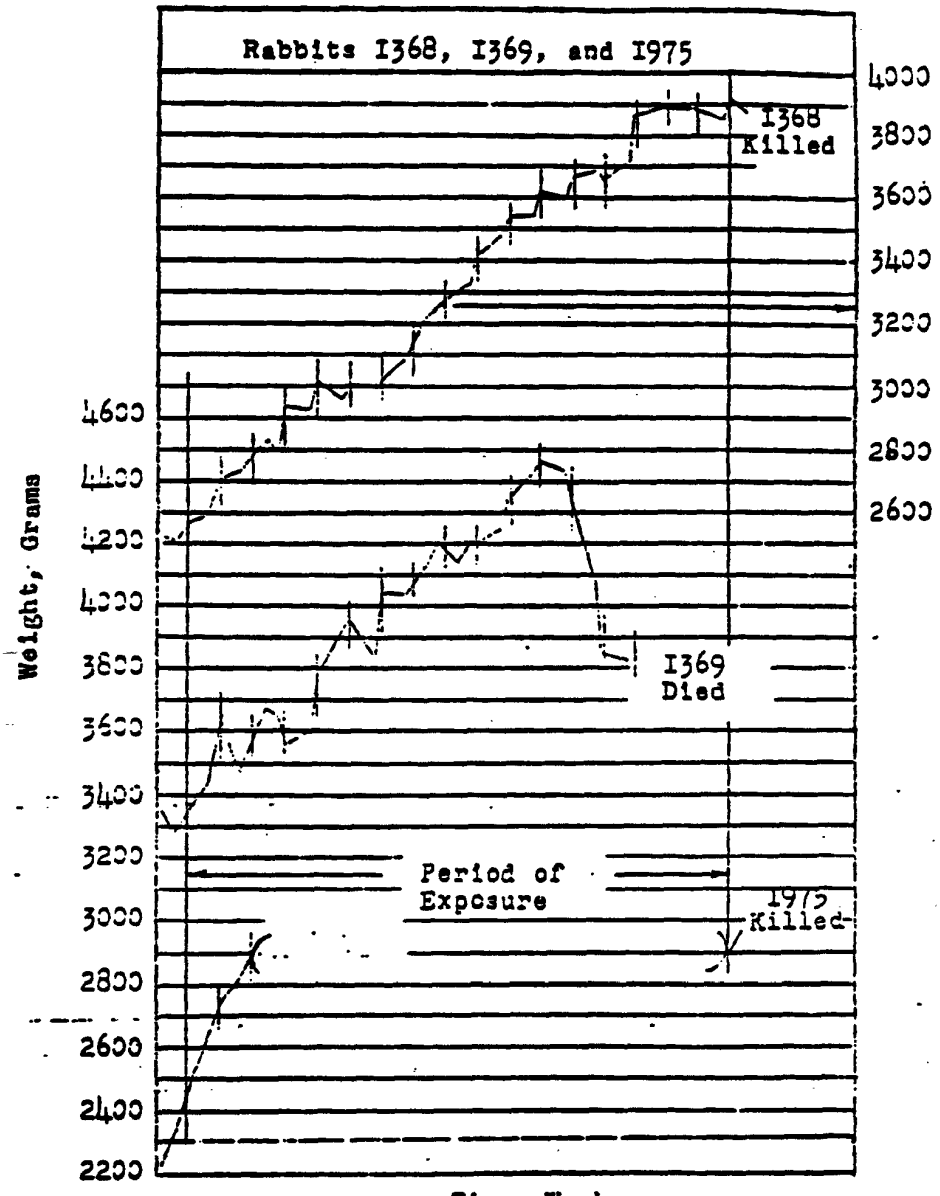


Controls, Subjected to Conditioned Air; for Experiment No. 2 Aroclor 1242 and Experiment No. 1 Aroclor 1254

Figure 39

GBRN002171

TOWOLDMON0001745

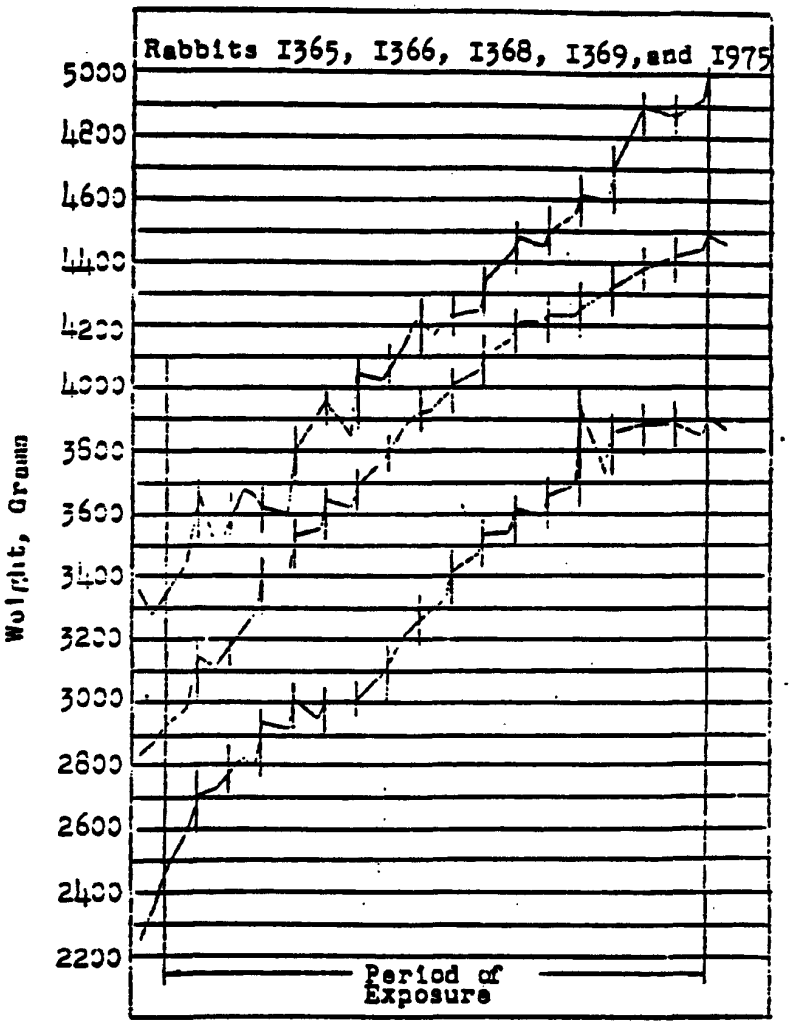


Controls Subjected to Conditioned Air; for Experiment No. 2 Aroclor 1242 and Experiment No. 1 Aroclor 1254

Figure 40

GBRN002172

TOWOLDMON0001746



Controls Subjected to Conditioned Air; for Experiment No. 2 Aroclor 1242 and Experiment No. 1 Aroclor 1254

Figure 41

GBRN002173

TOWOLDMON0001747