bombardment of U^{238} is not possible; therefore, the presence of the alpha-particle activity must be considered evidence for the formation of Am^{241} as the product of beta-particle emission by Pu^{241}.

Several samples known to contain appreciable amounts of Pu^{241} were carefully purified to remove all traces of rare-earth, and rare-earth-like, activities, then were allowed to stand for long periods of time. When "rare-earth" fractions were again removed from the samples, the alpha activity previously observed was again found, having grown into the samples from the plutonium source. Standard samples of the previously known plutonium isotopes were treated in a similar manner, but failed to yield a comparable alpha activity. Samples of the alpha activity were removed again and again from the plutonium samples, resulting in the observations: (1) the rate of formation of the alpha particle activity was constant over a period of several years, due to the long half-life of the parent isotope, (2) the yield from a given sample was a linear function of the time allowed for growth, and (3) the amount of growth in similar periods of time was directly dependent upon the intensity of 20 kev beta-particles, i.e., the amount of Pu^{241}, in the plutonium samples. This evidence proves that the alpha-activity is due to Am^{241} arising from the beta-particle emission of Pu^{241}.

Several samples of Am^{241} were irradiated with thermal neutrons over a long period of time. The principal product observed was an isotope of curium (element 96), Cm^{242} [8] as determined by the half-life (ca. 5 months) and the alpha-particle energy (6.1 Mev). Separation of the curium and americium activities was later achieved by the use of a Nalcite (Dowex 50) resin column with selective elution in ammonium citrate solution.[9] The Cm^{242} was formed by the reaction:

$$Am^{241}(n,\gamma)Am^{242}$$