

primary sources of release and effects on basic food systems of which marine diatoms play an important part. Because previous work had shown *Cylindrotheca closterium* to be capable of absorbing, concentrating, and metabolizing DDT, similar work was undertaken with the organism and PCB. Figure [4].

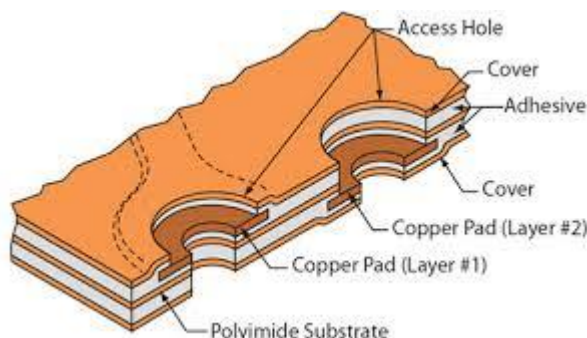


Figure 4 - Polychlorinated biphenyls (PCB's)

Thus, the critical aspects and characteristics to be kept in mind while designing and manufacturing PCBs destined for use in space products were discussed. It is shown that used systems are of national importance, and that they also have the potential to cause destruction to human life or property.

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Quality in the Space Instrument

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The improvement of the efficiency of Space engineering in Russia is one of the challenging tasks. Nowadays people work on various significant projects (such as “Audit of Projects”, “Products and Marketing”, “Business systems”, “Technology”, “Automation” and “Quality”) aimed at the improvement of the quality of space instrument-making. Space instrument-making is a large-scale project for the integration of intellectual and industrial resources. It is implemented on the basis of “Russian Space Systems” (RSS) [1].

Today any company involved in instrument-making has not only a comprehensive range of basic technology and equipment, but also the traditions of high quality instrument-making for space

electronic systems and the systems of communication, navigation, telemetry, control, remote sensing, surveying and ground control facilities of rocket and space technology for dual purposes.

Specialized products are designed for long life in harsh conditions of space and meet the high requirements of reliability and quality. The production is certified based on GOST ISO 9001-2011.

Russian space becomes different. Roscosmos and URSC have started the system modernization of the industry. They audit all important projects and fill in the competency matrix. This matrix is formed due to the specialization of each company closely connected with spacecrafts, carrier rockets, etc. They also make marketing audit, study business models and estimate the economy. Moreover, they carry out the audit of the management arrangements, technology and quality [2].

URSC is forming a new system of quality assurance in outer instrument-making. In particular, URSC is going to avoid the system of quality assurance which is achieved by the control of the final product, and proceed to the quality assurance in production processes.

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Linde's Chaotic Inflation model of the Universe

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Physical cosmology is the study of the largest-scale structures and dynamics of the Universe and is concerned with fundamental questions about its origin, structure, evolution, and ultimate fate. [1]. Dramatic advances in observational cosmology since the 1990s, including the cosmic microwave background, distant supernovae and galaxy redshift surveys, have led to the development of a standard model of cosmology. Linde's Chaotic inflation model is one of several cosmological models that awaits to be supported or refuted by evidence.

Prior to the inflation scenario there was no reason to believe that the world is highly heterogeneous on a large scale. On the contrary, astronomers say that the scale $\sim 10^{28}$ sm. observable universe heterogeneity $\delta\rho/\rho \sim 10^{-4}$, and they are small. The Inflation Model implies that the observable universe is but a tiny fraction of the world as a whole and the question of uniformity of the Total Universe becomes more complicated. The theory of inflation states that there are domain walls and the Universe as a whole is absolutely heterogeneous. Consider the behavior of a scalar field ϕ in the chaotic inflation scenario (CXP) in the model $V(\phi) = (\lambda\phi^4)/4$. A characteristic time:

$$\Delta t \sim H^{-1} \sim M_P/(\lambda^{1/2}\phi^2) \Rightarrow H^2 \propto (\lambda\phi^4)/M_P^2$$

homogeneous field ϕ due to expansion of the universe is reduced by the amount of

$$\Delta\phi = (M_P^2)/(2\pi\phi) .$$

On the other hand for Δt due to quantum fluctuations generated field inhomogeneity ϕ with wavelength $l \sim H^{-1}$ and with an average amplitude $\delta\phi \sim H \sim (\lambda^{1/2}\phi^2)/M_P$.

Hubble's law: $v = Hl = 1 = c = l/(\Delta t) \Rightarrow l \sim \Delta t \sim H^{-1}$

Equating $\Delta\phi = \delta\phi$, find ϕ^* : $\phi^* = \lambda^{-1/6}M_P$.